

COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF AGRICULTURE.

BULLETIN No. 52.



PROCEEDINGS OF THE SPRING MEETING

OF THE

Pennsylvania State Board of Agriculture,

AND GENERAL ROUND-UP OF

Farmers' Institute Managers and Lecturers,

HELD IN THE

Court House at Bloomsburg, Columbia Co., Pa., May 31, June 1 and 2, 1899.

PUBLISHED BY DIRECTION OF THE SECRETARY.

WM. STANLEY RAY,  
STATE PRINTER OF PENNSYLVANIA.  
1899.



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AT

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1899.





## PREFACE.

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This Bulletin, giving the proceedings of the meeting of the State Board of Agriculture, with those of the general round-up meeting of the Farmers' Institute workers of the State, is published, partly for the purpose of showing the character of the Institute work in Pennsylvania, and also for the information of the farmers of the State in scientific and practical agriculture. The papers and discussions are by the best informed of our agricultural people, and are well worth careful study because of their practical character and reliability, and the bulletin has been carefully indexed so as to make the information that it contains easily accessible.

It was found to be impracticable to discuss all of the papers that were presented at the meetings, owing to lack of time, and some could not be reached at all, but had to be read by title only, with the understanding that all would be printed in the report of the proceedings.

When, however, the report was ready for publication, it was found that the volume would be too large to be put into bulletin form, and it became necessary to omit a number of papers, reserving them for publication in the Annual Report. Only such papers are so reserved as were either read by title, or being read, were not discussed, and were presented by the following gentlemen: Mazyck P. Ravenel, John A. Woodward, S. B. Heiges, A. P. Young, Alva Agee, Gabriel Hiester, N. B. Critchfield, H. P. Armsby, C. L. Peck, Thos. J. Philips, J. S. Burns, E. H. Hess, Harry Hayward and W. A. Buckhout. The bulletin is commended to the attention of our farmers and institute workers, and it is hoped that its contents may prove helpful to all who take the time to give it careful reading.

JOHN HAMILTON,  
Secretary of Agriculture.



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# PROGRAMME

Of the Spring Meeting of the

Pennsylvania State Board of Agriculture,

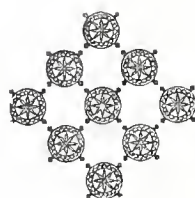
AND GENERAL ROUND-UP OF

Farmers' Institute Managers and Lecturers,

HELD IN THE

Court House at Bloomsburg, Columbia County, Penn'a., May 31, June  
1st and 2nd, 1899.

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# MEMBERS

OF THE

## PENNSYLVANIA STATE BOARD OF AGRICULTURE,

### FOR THE YEAR, 1899.

#### MEMBERS EX-OFFICIO.

HON. WM. A. STONE, Governor.  
 GENERAL J. W. LATTA, Secretary of Internal Affairs.  
 DR. N. C. SCHAEFFER, Superintendent of Public Instruction.  
 HON. LEVI G. McCAULEY, Auditor General.  
 DR. G. W. ATHERTON, President of the State College.  
 PROF. JOHN HAMILTON, Secretary of the Board of Agriculture.

#### APPOINTED BY THE GOVERNOR.

Hon. L. Rhone, Centre Hall, Centre County, .....Term expires 1900  
 Hon. S. R. Downing, Goshenville, Chester County, .....Term expires 1901  
 Hon. H. A. Gripp, Tyrone, Blair County, .....Term expires 1902

#### APPOINTED BY THE STATE POULTRY ASSOCIATION.

Hon. Norris G. Temple, Pocopson, Pa.

#### ELECTED BY COUNTY AGRICULTURAL SOCIETIES.

Term expires.

|                  |                         |                       |      |
|------------------|-------------------------|-----------------------|------|
| Adams, .....     | A. I. Weidner, .....    | Arendtsville, .....   | 1900 |
| Allegheny, ..... | J. S. Burns, .....      | Clinton, .....        | 1900 |
| Armstrong, ..... | D. W. Lawson, .....     | Dayton, .....         | 1902 |
| Beaver, .....    | T. A. Clifton, .....    | McCleary, .....       | 1902 |
| Bedford, .....   | David Holderbaum, ..... | Bedford, .....        | 1900 |
| Berks, .....     | H. G. McGowan, .....    | Geiger's Mills, ..... | 1901 |
| Blair, .....     | F. Jaekel, .....        | Holidaysburg, .....   | 1901 |
| Bradford, .....  | L. Piollet, .....       | Wysox, .....          | 1901 |
| Bucks, .....     | C. S. Balderston, ..... | Lahaska, .....        | 1902 |
| Butler, .....    | W. H. H. Riddle, .....  | Butler, .....         | 1900 |
| Cambria, .....   | J. J. Thomas, .....     | Carrolltown, .....    | 1900 |
| Cameron, .....   | J. K. Hockley, .....    | Emporium, .....       | 1900 |
| Carbon, .....    |                         |                       |      |
| Centre, .....    | J. A. Woodward, .....   | Howard, .....         | 1900 |

## ELECTED BY COUNTY AGRICULTURAL SOCIETIES—Continued.

|                       |                          | Term expires.                  |
|-----------------------|--------------------------|--------------------------------|
| Chester, .....        | Dr. J. P. Edge, .....    | Downingtown, .....1900         |
| Clarion, .....        | W. P. Henry, .....       | Fiollet, .....1901             |
| Clearfield, .....     | J. Blair Reed, .....     | Clearfield, .....1900          |
| Clinton, .....        | J. A. Herr, .....        | Cedar Springs, .....1902       |
| Columbia, .....       | H. V. White, .....       | Bloomsburg, .....1900          |
| Crawford, .....       | M. W. Oliver, .....      | Conneautville, .....1901       |
| Cumberland, .....     | C. H. Mullin, .....      | Mt. Holly Springs, .....1900   |
| Dauphin, .....        | S. F. Barber, .....      | Harrisburg, .....1900          |
| Delaware, .....       | G. E. Heyburn, .....     | Chadd's Ford, .....1901        |
| Elk, .....            |                          |                                |
| Erie, .....           | A. L. Wales, .....       | Corry, .....1901               |
| Fayette, .....        | J. M. Hantz, .....       | Merrittstown, .....1900        |
| Forest, .....         | C. A. Randall, .....     | Tionesta, .....1901            |
| Franklin, .....       | C. B. Hege, .....        | Marion, .....1902              |
| Fulton, .....         | W. C. Patterson, .....   | Webster's Mills, .....1901     |
| Greene, .....         |                          | .....1898                      |
| Huntingdon, .....     | G. G. Hutchison, .....   | Warriors' Mark, .....1900      |
| Indiana, .....        | S. M. McHenry, .....     | Indiana, .....1901             |
| Jefferson, .....      |                          | .....1899                      |
| Juniata, .....        | M. Rodgers, .....        | Mexico, .....1900              |
| Lackawanna, .....     |                          | .....1900                      |
| Lancaster, .....      | W. H. Brosius, .....     | Fern Glen, .....1901           |
| Lawrence, .....       | J. B. Johnston, .....    | New Wilmington, .....1900      |
| Lebanon, .....        | H. C. Snavely, .....     | Lebanon, .....1901             |
| Lehigh, .....         | Dr. J. P. Barnes, .....  | Allentown, .....1901           |
| Luzerne, .....        | John T. Phillips, .....  | Dallas, .....1902              |
| Lycoming, .....       | A. J. Kahler, .....      | Hughesville, .....1900         |
| McKean, .....         | F. L. Sherburne, .....   | East Smethport, .....1900      |
| Mercer, .....         | John T. Crill, .....     | Mercer, .....1902              |
| Mifflin, .....        | D. E. Notestine, .....   | Lewistown, .....1901           |
| Monroe, .....         | R. F. Schwarz, .....     | Analomink, .....1902           |
| Montgomery, .....     | J. Sexton, .....         | North Wales, .....1902         |
| Montour, .....        | J. K. Murray, .....      | Pottsgrove, .....1901          |
| Northampton, .....    | B. B. McClure, .....     | Bath, .....1900                |
| Northumberland, ..... |                          | .....1899                      |
| Perry, .....          | J. E. Stephens, .....    | Acker, .....1901               |
| Philadelphia, .....   | E. Lonsdale, .....       | Chestnut Hill, .....1901       |
| Pike, .....           |                          |                                |
| Potter, .....         | W. A. Gardner, .....     | Andrews' Settlement, .....1900 |
| Schuylkill, .....     | W. H. Stout, .....       | Pine Grove, .....1900          |
| Snyder, .....         | J. F. Boyer, .....       | Mt. Pleasant Mills, .....1900  |
| Somerset, .....       | N. B. Critchfield, ..... | Critchfield, .....1901         |
| Sullivan, .....       | J. W. Rodgers, .....     | Forksville, .....1900          |
| Susquehanna, .....    | C. W. Brodhead, .....    | Montrose, .....1901            |
| Tioga, .....          | F. E. Field, .....       | Balsam, .....1902              |
| Union, .....          | J. Newton Glover, .....  | Vicksburg, .....1902           |
| Venango, .....        | W. J. Magee, .....       | Oil City, .....1901            |
| Warren, .....         | R. J. Weld, .....        | Sugar Grove, .....1901         |
| Washington, .....     | J. McDowell, .....       | Washington, .....1902          |
| Wayne, .....          | W. C. Norton, .....      | Aldenville, .....1901          |
| Westmoreland, .....   | M. N. Clark, .....       | Claridge, .....1901            |
| Wyoming, .....        |                          | .....1898                      |
| York, .....           | S. B. Heiges, .....      | York, .....1901                |

## ORDER OF BUSINESS.

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Wednesday Morning, May 31, 1899.

Call to Order at 11 A. M.

Adjournment on Motion.

1. Roll Call of Members.
  2. Reading of Minutes.
  3. Appointment of Committee on Credentials.
  4. Reception of Credentials of Members-elect and Delegates.
  5. Report of Committee on Credentials.
  6. Reports of Standing Committees.
  7. Unfinished Business.
  8. New Business.
  9. Miscellaneous Business.
  10. Adjournment.
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Wednesday Afternoon, May 31, 1899.

Call to Order at 2 P. M.

Adjournment on Motion.

### PAPERS AND DISCUSSIONS.

1. "The Past, Present and Future of the Pennsylvania Farmer,"  
     By A. J. Kahler, Member from Lycoming, Hughesville, Pa.
2. "The Home on the Farm,"  
     By Howard G. McGowan, Member from Berks, Geiger's Mills, Pa.
3. "The Township High School,"  
     By Joel A. Herr, Member from Clinton, Cedar Springs, Pa.

4. "Our Mistakes,"

By D. L. Notestine, Member from Mifflin, Lewis-  
town, Pa.

5. "Stock Raising for Profit,"

B. P. K. Patterson, Greenwood, Columbia County, Pa.

6. "The Old and New Way of Farming,"

By J. F. Boyer, Member from Snyder, Mount Pleasant  
Mills, Pa.

7. "The Creamery in Columbia County,"

By Charles W. Eckman, Millville, Columbia County,  
Pa.

8. "Does it Pay the Farmer to Make Butter?"

By Philip Harris, Lime Ridge, Columbia County, Pa.

9. "The Cultivation of Tobacco,"

By Hon. Louis Piolet, Wysox, Bradford County, Pa.

10. "Underdraining as an Investment,"

By J. K. Murray, Member from Montour, Potts-  
grove, Pa.

11. "The Work of the State Live Stock Sanitary Board,"

By Dr. Leonard Pearson, State Veterinarian, Har-  
risburg, Pa.

12. "The Life Histories of Insects as a Guide to Their Treatment,"

By Dr. H. T. Fernald, Economic Zoologist, Harris-  
burg, Pa.

13. "Taxation and the Farmer,"

By Hon. William T. Creasy, Catawissa, Columbia  
County, Pa.

14. "The Application of Local Taxes,"

By Hon. Samuel R. Downing, West Chester, Chester,  
County, Pa.

GENERAL QUESTION.

"How Can We Obtain Equalization of Taxes?"



Wednesday Evening, May 31, 1899.

MEET IN THE NORMAL SCHOOL AUDITORIUM.

Call to Order at 7.30 P. M.

Adjournment on Motion.

EXERCISES.

Prayer.

Music.

Address of Welcome,

By Hon. W. O. Holmes, Mayor.

Response, By H. V. White, Esq., Member of the Board from Columbia County.

1. "What Forestry Is and What It Can Do for the State,"

(Illustrated Lecture.)

By Dr. J. T. Rothrock, Commissioner of Forestry,  
Harrisburg, Pa.

2. "Bacteriology for the Farmer,"

By Dr. M. P. Ravenel, Bacteriologist of the State Live  
Stock Sanitary Board, Philadelphia, Pa.

3. "The Soil and Its Cultivation,"

By Col. John A. Woodward, Member from Centre,  
Howard, Pa.

4. "The Possibilities of Pennsylvania as a Fruit Growing State,"

By Prof. S. B. Heiges, Ex-Pomologist of the National  
Department of Agriculture, York, Pa.

# LOCAL FARMERS' INSTITUTE MANAGERS' DAY,

THURSDAY, JUNE 1st, 1899.

## COUNTY CHAIRMEN OF PENNSYLVANIA FARMERS' INSTITUTE COMMITTEES.

SEASON OF 1898-99.

| County.           | Name.                       | Place.          |
|-------------------|-----------------------------|-----------------|
| Adams, .....      | A. I. Weidner, .....        | Arendtsville.   |
| Allegheny, .....  | J. S. Burns, .....          | Clinton.        |
| Armstrong, .....  | E. A. Brodhead, .....       | Kittanning.     |
| Beaver, .....     | Thomas A. Clifton, .....    | McCleary.       |
| Bedford, .....    | D. Holderbaum, .....        | Bedford.        |
| Berks, .....      | H. G. McGowan, .....        | Geiger's Mills. |
| Blair, .....      | H. L. Harvey, .....         | Duncansville.   |
| Bradford, .....   | L. Piollet, .....           | Wysox.          |
| Bucks, .....      | Chas. L. Balderston, .....  | Lahaska.        |
| Butler, .....     | W. H. H. Riddle, .....      | Butler.         |
| Cambria, .....    | J. J. Thomas, .....         | Carrolltown.    |
| Cameron, .....    | R. P. Heilman, M. D., ..... | Emporium.       |
| Carbon, .....     | J. H. Werner, .....         | Weatherly.      |
| Centre, .....     | John A. Woodward, .....     | Howard.         |
| Chester, .....    | Dr. M. E. Conard, .....     | West Grove.     |
| Clarion, .....    | G. T. Henry, .....          | Piollet.        |
| Clearfield, ..... | A. Judson Smith, .....      | New Millport.   |
| Clinton, .....    | Joel A. Herr., .....        | Cedar Springs.  |
| Columbia, .....   | H. V. White, .....          | Bloomsburg.     |
| Crawford, .....   | M. W. Oliver, .....         | Conneautville.  |
| Cumberland, ..... | R. H. Thomas, .....         | Mechanicsburg.  |
| Cumberland, ..... | B. D. Biggs, .....          | Shippensburg.   |
| Dauphin, .....    | S. F. Barber, .....         | Harrisburg.     |
| Delaware, .....   | G. E. Heyburn, .....        | Chadd's Ford.   |
| Elk, .....        | J. M. Wittman, .....        | St. Mary's.     |
| Erie, .....       | A. L. Wales, .....          | Corry.          |
| Fayette, .....    | J. M. Hantz, .....          | Merrittstown.   |
| Forest, .....     | Chas. A. Randall, .....     | Tionesta.       |
| Franklin, .....   | C. B. Hege, .....           | Marion.         |
| Fulton, .....     | W. C. Patterson, .....      | McConnellsburg. |
| Greene, .....     | John H. Smith, .....        | Nineveh.        |
| Huntingdon, ..... | G. G. Hutchison, .....      | Warrior's Mark. |
| Indiana, .....    | S. M. McHenry, .....        | Indiana.        |
| Jefferson, .....  | James McCracken, .....      | Brookville.     |
| Juniata, .....    | Matthew Rodgers, .....      | Mexico.         |

| County.               | Name.                    | Place.              |
|-----------------------|--------------------------|---------------------|
| Lackawanna, .....     | H. W. Northup, .....     | Glenburn.           |
| Lancaster, .....      | W. H. Brosius, .....     | Fernglen.           |
| Lawrence, .....       | J. B. Johnston, .....    | New Wilmington.     |
| Lebanon, .....        | H. C. Snively, .....     | Lebanon.            |
| Lehigh, .....         | J. L. Schreiber, .....   | Hosensack.          |
| Luzerne, .....        | J. E. Hildebrandt, ..... | Lehman.             |
| Lycoming, .....       | A. J. Kahler, .....      | Hughesville.        |
| McKean, .....         | F. L. Sherburne, .....   | East Smethport.     |
| Mercer, .....         | T. P. Munnell, .....     | Indian Run.         |
| Millin, .....         | D. E. Notestine, .....   | Lewistown.          |
| Monroe, .....         | Randall Bisbing, .....   | Minsi.              |
| Montgomery, .....     | Jason Sexton, .....      | North Wales.        |
| Montour, .....        | J. K. Murray, .....      | Pottsgrove.         |
| Northampton, .....    | B. B. McClure, .....     | Bath.               |
| Northumberland, ..... | C. C. McWilliams, .....  | Elysburg.           |
| Perry, .....          | J. E. Stephens, .....    | Acker.              |
| Philadelphia, .....   | Edwin Lonsdale, .....    | Chestnut Hill.      |
| Pike, .....           | J. K. Van Etten, .....   | Milford.            |
| Potter, .....         | C. L. Peck, .....        | Coudersport.        |
| Schuylkill, .....     | W. H. Stout, .....       | Pine Grove.         |
| Snyder, .....         | J. F. Boyer, .....       | Mt. Pleasant Mills. |
| Somerset, .....       | N. B. Critchfield, ..... | Critchfield.        |
| Sullivan, .....       | John W. Rodgers, .....   | Forksville.         |
| Susquehanna, .....    | C. W. Brodhead, .....    | Montrose.           |
| Tioga, .....          | F. E. Field, .....       | Balsam.             |
| Union, .....          | Amos Scott, .....        | Spring Garden.      |
| Venango, .....        | Porter Phipps, .....     | Kennerdell.         |
| Warren, .....         | Geo. A. Woodside, .....  | Sugar Grove.        |
| Washington, .....     | John McDowell, .....     | Washington.         |
| Wayne, .....          | W. C. Norton, .....      | Aldenville.         |
| Westmoreland, .....   | M. N. Clark, .....       | Claridge.           |
| Wyoming, .....        | Elmer Detrick, .....     | Russell Hill.       |
| York, .....           | Gerard C. Brown, .....   | Yorkana.            |

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## PROGRAMME.

Thursday Morning, June 1, 1899.

Call to Order at 8.30 A. M.

Adjournment on Motion.

GABRIEL HIESTER, ESQ., of Dauphin County, Chairman.

### PAPERS AND DISCUSSIONS.

#### 1. "Rocks and Soils."

By William H. Stout, Member from Schuylkill, Pine Grove, Pa.

2. "Soil, Plants and Plant Food,"

By L. W. Lighty, Esq., East Berlin, Adams County,  
Pa.

3. "Crimson Clover and Its Place in Agriculture,"

By J. W. Allison, Esq., Mercer, Mercer County, Pa.

4. "The Value of Fertility and a Cheap Way to Get It,"

By R. S. Seeds, Esq., Birmingham, Huntingdon  
County, Pa.

5. "Soil Cultivation and Soil Moisture,"

By Dr. William Frear, Chemist, Pennsylvania State  
Experiment Station, State College, Pa.

6. "Why Farmers Should Know the Constituents of Feed,"

By O. W. Stoughton, Esq., Evans City, Butler County,  
Pa.

7. "Some Late Experiences,"

By A. Judson Smith, Esq., New Millport, Clearfield  
County, Pa.

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Thursday Afternoon, June 1, 1899.

GABRIEL HIESTER, ESQ., of Dauphin County, Chairman.

Call to Order at 1.30 P. M.

Adjournment on Motion.

PUBLIC CONFERENCE OF LOCAL INSTITUTE MANAGERS.

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LIST OF QUESTIONS.

1. What consideration should govern in selecting a place where an institute is to be held?
2. How many days should an institute be continued?
3. How to organize for a successful institute?
4. How shall the institute be best advertised?
5. Should local speakers be secured, and if so, in what proportion?
6. Should there be special sessions devoted to a single topic?
7. Should there be a woman's session?

8. Should there be a leading topic for the entire State?
9. Should music be provided for the several sessions, and if so, what is the best method of securing it?
10. How many sessions shall there be held each day?
11. What is the best method for preparing a programme, and what should it embrace?
12. Should there be a lecturer for mere entertainment?
13. How shall we make sure that an efficient presiding officer is secured?
14. What attention should the local manager give to the State speakers?
15. How many topics should be arranged for each session?
16. Should there be a question box, and if so, how ought it to be conducted?
17. Should an address be written or oral?
18. Should a State speaker make more than one set speech in a day?
19. Should partisan topics be permitted?
20. What is the remedy for a chairman who is inefficient, and how shall the remedy be applied?
21. What is to be done with a local manager who is inefficient and does not work up his institutes?
22. Should an institute be held in large towns or cities?
23. What shall be done with a manager who furnishes no local help?
24. What shall be done with a manager who ignores the State speakers and uses local help exclusively?
25. What shall be done with a local manager who overloads his programme?
26. How much time should be given to the Question Box?
27. Should an institute be advertised as a State institute, or be named after the particular grange, alliance or farm club in whose vicinity it is held?
28. Should there be a committee on resolutions, and if so, why, and on what should they report?

# COUNTRY HOME SESSION.

Thursday Evening, June 1, 1899.

GABRIEL HIESTER, ESQ., of Dauphin County, Chairman.

MEET IN THE NORMAL SCHOOL AUDITORIUM.

Call to Order at 7.30 P. M.

Adjournment on Motion.

Prayer.

Music.

## PAPERS AND DISCUSSIONS.

### 1. "How to Lessen the Labors of Farmers' Wives,"

By Calvin Cooper, Esq., Bird-in-Hand, Lancaster County, Pa.

### 2. "The Ornamentation of Home Grounds,"

By Prof. Geo. C. Butz, State College, Centre County Pa.

### 3. "The Value of Country Home Life to Young People,"

By R. L. Beardslee, Esq., Warrenham, Bradford County, Pa.

### 4. "The Convenient Arrangement of Farm Buildings,"

By Abner Fague, Esq., Picture Rocks, Lycoming County, Pa.

### 5. "The Principal Crop—Our Families,"

By J. B. Johnston, Esq., Member from Lawrence, New Wilmington, Pa.

### 6. "The American Farmer as a Factor in Our Government,"

By Hon. Gerard C. Brown, Yorkana, York County, Pa.

### 7. "The Rural School Problem,"

By A. P. Young, Esq., Millville, Columbia County, Pa.

### 8. "Our Country Schools,"

By Alva Agee, Esq., Cheshire, Ohio.

# FARMERS' INSTITUTE LECTURERS' DAY,

FRIDAY JUNE 2nd, 1899.

## LIST OF STATE SPEAKERS ENGAGED IN FARMERS' INSTITUTE WORK

IN PENNSYLVANIA DURING

SEASON OF 1898-99.

|                                      |                                 |
|--------------------------------------|---------------------------------|
| Alva Agee, Cheshire, O.              | Prof. S. B. Heiges, York.       |
| J. W. Allison, Mercer.               | Gabriel Hiester, Harrisburg.    |
| Dr. H. P. Armsby, State College.     | Joel A. Herr, Cedar Springs.    |
| R. L. Beardslee, Warrenham.          | Enos H. Hess, State College.    |
| J. F. Boyer, Mt. Pleasant Mills.     | W. F. Hill, Westford.           |
| Hon. Gerard C. Brown, Yorkana.       | C. L. Hoyt, Elkland.            |
| Prof. W. A. Bucknout, State College. | J. B. Johnston, New Wilmington. |
| J. S. Burns, Clinton.                | L. W. Lighty, East Berlin.      |
| Prof. Geo. C. Butz, State College.   | John McDonald, Delhi, N. Y.     |
| L. A. Clinton, Ithaca, N. Y.         | A. L. Martin, Enon Valley.      |
| Calvin Cooper, Bird-in-Hand.         | C. L. Peck, Coudersport.        |
| N. B. Critchfield, Critchfield.      | Thomas J. Philips, Atglen.      |
| S. R. Downing, Goshenville.          | H. H. Russell, Belle Valley.    |
| Dr. Wm. Frear, State College.        | R. S. Seeds, Birmingham.        |
| J. A. Fries, State College.          | A. Judson Smith, New Millport.  |
| John Gould, Aurora, O.               | O. W. Stoughton, Evan's City.   |
| Harry Hayward, State College.        | W. H. Stout, Pine Grove.        |
| Col. John A. Woodward, Howard.       |                                 |

## SUPPLEMENTAL LIST OF LECTURERS.

INSTITUTE SEASON OF 1898-99.

|                                    |                                      |
|------------------------------------|--------------------------------------|
| James Q. Atkinson, Three Tuns.     | Dr. J. P. Edge, Downingtown.         |
| S. F. Barber, Harrisburg.          | William M. Ely, Solebury.            |
| W. M. Benninger, Walnutport.       | Abner Fague, Picture Rocks.          |
| Wm. B. Bigler, M. D., Tilden.      | L. J. Farmer, Pulaski, N. Y.         |
| M. S. Bond, Danville.              | G. R. Foulke, West Chester.          |
| George Campbell, Green's Landing.  | Luther Gates, Beaver Center.         |
| C. E. Chapman, Peruville, N. Y.    | Dr. C. E. Goldsborough, Hunterstown. |
| Prof. C. B. Cochran, West Chester. | Dr. George G. Groff, Lewisburg.      |
| M. E. Conard, West Grove.          | Dr. S. P. Heilman, Heilman Dale.     |
| Joseph Crist, Critchfield.         | George W. Hood, Indiana.             |



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|---------------------------------------|---------------------------------------|
| E. S. Hoover, Lancaster.              | J. B. Phelps, Conneautville.          |
| W. Horace Hoskins, Philadelphia.      | Geo. T. Powell, Ghent, N. Y.          |
| G. G. Hutchison, Warrior's Mark.      | Joseph Beatty Powell, Shadeland.      |
| J. B. Irons, Erie.                    | Anna E. Redifer, State College.       |
| Jasper T. Jennings, New Milford.      | Mattie Reeder, New Hope.              |
| W. B. K. Johnson, Allentown.          | Dr. M. P. Ravenel, Philadelphia.      |
| Helen Stowell Johnson, Corry.         | Mrs. Sarah Tyson Rorer, Philadelphia. |
| A. J. Kahler, Hughesville.            | Oliver D. Schock, Hamburg.            |
| Florence R. Kenderdine, Lumberville.  | Dr. N. C. Schaeffer, Harrisburg.      |
| W. H. Knouse, Swales.                 | R. F. Schwarz, Analomink.             |
| John H. Landis, Millersville.         | Noah Seanor, Plumville.               |
| Col. W. Penn Lloyd, Mechanicsburg.    | R. S. Searle, Montrose.               |
| Edwin Lonsdale, Chestnut Hill.        | A. G. Seyfert, East Earl.             |
| Col. George Nox McCain, Philadelphia. | Jason Sexton, Spring House.           |
| R. E. McDaniel, Springdale.           | O. P. Shaver, Freidens.               |
| M. E. McDonnell, State College.       | John L. Shawver, Bellefontaine, O.    |
| Dr. J. M. Martin, Mercersburg.        | Robert M. Simmers, Phoenixville.      |
| Miss M. Alice Meyer, Clintondale.     | W. C. Sloan, Sloan.                   |
| T. O. Milliken, Cornpropsts.          | Wellington Smith, Mifflintown.        |
| Frank N. Moore, North Orwell.         | T. B. Terry, Hudson, O.               |
| George A. Mitchell, Vineland, N. J.   | W. H. Thompson, Wyalusing.            |
| William L. Nesbit, Lewisburg.         | Jacob Twining, Newtown.               |
| C. D. Northrop, Elkland.              | Emil Ulrich, Stroudsburg.             |
| M. W. Oliver, Conneautville.          | Prof. Geo. C. Watson, State College.  |
| Isaac Parry, Breadysville.            | James A. Waugh, Pittsburg.            |
| Mrs. Mary Parry, Higbee.              | S. M. Wherry, Shippensburg.           |
| Joseph H. Paschall, Ward.             | J. M. Wittman, St. Mary's.            |
| J. H. Peachey, Belleville.            | Annie Wittenmyer, Sanatoga.           |
| Daniel H. Pershing, Stauffer.         | J. S. Woodward, Lockport.             |
|                                       | A. P. Young, Millville.               |

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## DEPARTMENT LECTURERS.

- PROF. JOHN HAMILTON, Secretary of Agriculture.  
 HON. A. L. MARTIN, Director of Institutes.  
 MAJOR LEVI WELLS, Dairy and Food Commissioner.  
 DR. H. T. FERNALD, Economic Zoologist.  
 DR. J. T. ROTHROCK, Commissioner of Forestry.  
 DR. LEONARD PEARSON, State Veterinarian.



# INSTITUTE LECTURERS' DAY.

Friday Morning, June 2, 1899. .

COL. JOHN A. WOODWARD, of Centre County, Chairman.

Call to Order at 8.30 A. M.

Adjournment on Motion.

## PAPERS AND DISCUSSIONS.

### 1. "Fruit Culture for Profit,"

By Gabriel Hiester, Esq., Member from Dauphin,  
Harrisburg, Pa.

### 2. "Treatment of Non-Productive Orchards,"

By Prof. S. B. Heiges, Member from York, York, Pa.

### 3. "Small Fruit for Comfort,"

By F. F. Merceron, Esq., Catawissa, Columbia  
County, Pa.

### 4. "Potato Culture,"

By Hon. N. B. Critchfield, Member from Somerset,  
Critchfield, Pa.

### 5. "Forage Crops,"

By Dr. H. P. Armsby, Director of Pennsylvania State  
Experiment Station, State College, Pa.

### 6. "Successful Dairying,"

By C. L. Peck, Esq., Coudersport, Potter County, Pa.

### 7. "Business Methods on the Farm,"

By Hon. Thos. J. Philips, Atglen, Chester County, Pa.

### 8. "The Breeding and Care of Swine,"

By J. S. Burns, Esq., Member from Allegheny Clin-  
ton, Pa.

### 9. "The Feeding and Management of Dairy Cattle,"

By Prof. Enos H. Hess, State College, Centre County,  
Pa.

### 10. "Pennsylvania Dairying,"

By Harry Hayward, State Experiment Station, State  
College, Pa.

### 11. "Leaves of Plants and their Relation to Plant Diseases,"

By Prof. W. A. Buckhout, State College, Pa.

Friday Afternoon, June 2, 1899.

COL. JOHN A. WOODWARD, Member from Centre, Chairman.

Call to Order at 1.30 P. M.

Adjournment on Motion.

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PUBLIC CONFERENCE OF INSTITUTE LECTURERS.

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LIST OF QUESTIONS.

1. What qualifications should a State lecturer possess?
2. What range of topics should be selected for your institutes, or, in other words, what ought to be taught?
3. How shall the teaching be most successfully presented?
4. Shall a speaker discuss the same topic each year?
5. How long ought a speaker to talk?
6. How should a speaker prepare himself for institute work?
7. What is the remedy for a speaker who exaggerates?
8. What is the remedy for a speaker who occupies more than his proportion of time?
9. What is the best method to pursue when one speaker appropriates the material of another and thus destroys the other's speech?
10. Should school children's essays be permitted? If so, why?
11. How may an audience be brought to participate in the discussion?
12. Should a speaker take advantage of a question to make a speech? If not, how will you stop him?
13. How often should any one speaker be called upon in any one session?
14. Should local managers have the proceedings printed in the county papers? If so, how can this be best done?

# THE SPRING SESSION OF THE PENNSYLVANIA STATE BOARD OF AGRICULTURE AND GENERAL ASSEMBLY OF FARMERS' INSTITUTE MANAGERS AND LECTURERS.

Bloomsburg, May 31, 1899.

The Spring Session of the Pennsylvania State Board of Agriculture and General Assembly of Farmers' Institute Managers and Lecturers was opened in the court house at Bloomsburg, Columbia County, Pa., at 11 o'clock, A. M., Wednesday, May 31, A. D. 1899, Prof. S. B. Heiges, of York, Vice President, presiding.

The roll of members was called by Secretary Hamilton, and absentees noted. The following answered to their names:

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## MEMBERS EX-OFFICIO.

Prof. John Hamilton, Secretary of the Board of Agriculture.

## APPOINTED BY THE GOVERNOR.

H. A. Gripp, Tyrone, Blair County.

## ELECTED BY COUNTY AGRICULTURAL SOCIETIES.

|                     |                          |                     |
|---------------------|--------------------------|---------------------|
| Bedford, .....      | D. Holderbaum, .....     | Bedford.            |
| Bradford, .....     | L. Piollet, .....        | Wysox.              |
| Butler, .....       | W. H. H. Riddle, .....   | Butler.             |
| Cambria, .....      | J. J. Thomas, .....      | Carrolltown.        |
| Clarion, .....      | W. P. Henry, .....       | Piollet.            |
| Clinton, .....      | J. A. Herr, .....        | Cedar Springs.      |
| Columbia, .....     | H. V. White, .....       | Bloomsburg.         |
| Dauphin, .....      | S. F. Barber, .....      | Harrisburg.         |
| Fayette, .....      | J. M. Hantz, .....       | Merrittstown.       |
| Franklin, .....     | C. B. Hege, .....        | Marion.             |
| Huntingdon, .....   | G. G. Hutchison, .....   | Warrior's Mark.     |
| Lancaster, .....    | W. H. Brosius, .....     | Fernglan.           |
| Lehigh, .....       | J. P. Barnes, .....      | Allentown.          |
| Lycoming, .....     | A. J. Kahler, .....      | Hughesville.        |
| Mercer, .....       | John T. Crill, .....     | Mercer.             |
| Mifflin, .....      | D. E. Notestine, .....   | Lewistown.          |
| Northampton, .....  | B. B. McClure, .....     | Bath.               |
| Perry, .....        | J. E. Stephens, .....    | Acker.              |
| Schuylkill, .....   | W. H. Stout, .....       | Pine Grove.         |
| Snyder, .....       | J. F. Boyer, .....       | Mt. Pleasant Mills. |
| Somerset, .....     | N. B. Critchfield, ..... | Critchfield.        |
| Susquehanna, .....  | C. W. Brodhead, .....    | Montrose.           |
| Warren, .....       | R. J. Weld, .....        | Sugar Grove.        |
| Westmoreland, ..... | M. N. Clark, .....       | Claridge.           |
| York, .....         | S. B. Heiges, .....      | York.               |

## MINUTES.

The minutes of the last meeting of the State Board of Agriculture were read, corrected, added to, and approved. The correction consisted of inserting the names of Hon. Louis Piollet as a member of the committee to escort Governor Stone to the meeting, in lieu of Joel A. Herr, Esq., and the addition of the names of Messrs. Critchfield, Thomas, White and McHenry, as present at the January sessions of the Board, they having arrived after the first roll call.

## CREDENTIALS.

Messrs. Thomas, Barnes and Hutchison were appointed by the Chair a committee on credentials. They reported as follows: Appointed by the Governor: Hon. H. A. Gripp, of Tyrone, Blair county. Elected by County Agricultural Societies: M. W. Oliver, Crawford county; W. J. Magee, Venango county, and J. Newton Glover, of Union county.

As delegates: Colonel H. C. Demming and W. F. Rutherford, Esq., representing the Pennsylvania State Agricultural Society.

On motion of Mr. Hutchison, duly seconded, the persons reported as members were unanimously elected as such.

On motion of Mr. Herr, duly seconded, Messrs. Demming and Rutherford were admitted as delegates by a unanimous affirmative vote.

On motion of Mr. White, duly seconded, Mr. E. H. Sloan, President of the Columbia County Agricultural Society, and Mr. A. P. Young, of Valley Grange, Columbia county, were also admitted as delegates.

On motion of Mr. Hutchison, duly seconded, Mr. R. S. Seeds, of Warrior's Mark Grange, No. 974, of Huntingdon county, was unanimously admitted as a delegate.

## REPORTS.

Reports from Standing Committees were made as follows:

On Fruits, through Mr. Stout: A good strawberry crop; peaches an absolute failure.

On Dairying, through Mr. Barber: The dairy interests more encouraging than last year.

## BOARD MEETINGS.

Mr. Herr stated it was time to provide for the sessions of the year, other than the regular meeting in January.

Mr. Hutchison favored two meetings a year, to be held in January and June.

Mr. Piollet desired to know whether the Department would be able to provide for the expenses of members at the January meeting.

Mr. Thomas stated that this was an invitation to meet at Bloomsburg as members of the various county institutes.

Mr. Clark thought that on account of the numerous fairs and other matters in the fall, it would be better to meet in the spring, and have this meeting cover the entire ground, excepting the annual meeting in January.

Secretary Hamilton stated that the only money at the disposal of the Department for the payment of the expenses of anybody is the money that was appropriated for institute purposes; and, as word had been sent out, this fund had been so managed during the past two years as to leave a balance on hand for use at such a general round-up of Farmers' Institute meetings as this. To this meeting he had invited the county chairmen of institute committees, and all the lecturers who have been in active work in the State during the past year; and it was also stated that their expenses would be met; that the meeting was to be held at the same time the State Board held its meeting; and the authorities thus got around a somewhat delicate matter, as in nearly all the counties the chairman of the institute board is a member of the State Board of Agriculture. In addition to that, there were a number of the lecture board who constituted a part of the institute force of the State. The fund is not for the purpose of paying members of the State Board of Agriculture, but for the purpose of defraying the necessary expenses of county institute managers, and of institute lecturers; and if a member of the State Board of Agriculture belongs to either class, his expenses will be paid in connection with this meeting.

Mr. Herr thought it would be desirable to have the Board meet sometime before the work of the institute begins next autumn. He was willing to pay his own expenses, if the majority of the Board would.

Deputy Secretary Martin having been requested to address the meeting, stated that he was here to-day as an interested visitor, and had been interested in all this discussion, especially that pertaining to institute work. It would not be proper that he should at this time enter into a discussion of the relations that the Board should sustain to institute matters, except so far as to say that it would be his desire and endeavor to bring together in active work all the departments of agriculture in all its relations within the State.

Mr. Herr moved that a meeting be held in the month of October.

This motion was duly seconded but not agreed to.

#### ANNOUNCEMENTS.

The chairman of the meeting requested that all members of the State Board of Agriculture, who had arrived since the calling of the roll, would please report their presence to the Secretary. Also that any delegates from any agricultural or horticultural society, or



from any Grange or Farmers' Alliance would hand their names to Prof. Hamilton.

Mr. White announced that in addition to the hotels, there were boarding houses and private residences where delegates could be accommodated; that badges had been provided for all delegates and representatives, and that seats would be reserved at the evening sessions for all having badges, until five minutes after the time for the opening of the session.

Secretary Hamilton urged that members and delegates wear the badges, so that citizens and others may know they are strangers, and that the courtesies of the inhabitants of the town may not be misplaced.

He further stated that papers read would be printed as submitted.

#### STENOGRAPHER'S REPORT.

Mr. Critchfield wanted to know about the stenographer's report.

Secretary Hamilton stated that he believed it would be satisfactory.

Mr. Critchfield replied that that had not been his experience.

Secretary Hamilton said that he intended this to be the best report ever made for the Board; that the most capable men had been engaged to do the work, and he believed the shorthand note taker was not excelled in the United States. The officers of the Department of Agriculture wanted the people of the United States to know what the institute workers of Pennsylvania are doing, and printed copies of the proceedings would be sent all over the country—that at least 5,000 copies would be printed to begin with. Owing to the length of the programme, it was possible that some papers would have to be disposed of hurriedly, in order that some of the more vital questions affecting agricultural institute work in Pennsylvania should have full consideration. The programme had been divided up into three distinct sections, one for the Board, one for the local Farmers' Institute Managers to get in all their complaints, as well as pleasant reports, and to criticise the speakers or lecturers. After that would come the speakers' or lecturers' turn, and they will have the last speaking. So it was intended to hear from the institute work on both sides—to hear from those who manage in the counties, and to have remarks on the part of those who go out from the Department to speak on the subject of Agriculture.

Then there is to be a "general day." It is possible, owing to the extreme length of the programme, that this feature of the convention will not be reached; or, if reached, not concluded. All present are invited to speak, but no one simply for the purpose of talking. Whatever is said, should be to the point, and the remarks will be stenographically reported.

## SECRETARY EX-OFFICIO.

After remarks by Messrs. Critchfield and Herr as to whether the Secretary of the State Board of Agriculture was the Secretary *ex-officio* of these various meetings, and it having been decided in the affirmative, the Board adjourned.

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 SECOND SESSION.
 

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May 31, 1899.

The Board reassembled at two o'clock P. M., Vice President Heiges in the Chair.

Vice President Heiges. The first paper on the programme is entitled "The Past, Present and Future of the Pennsylvania Farmer," by A. J. Kahler, member from Lycoming, Hughesville, Pa.

Mr. Kahler. Mr. President, Ladies and Gentlemen: I am not in the habit of offering an apology, but have to in this instance. For some reason or other I had no notice that I was placed upon the programme, and I am without my notes. I would not like to discuss the subject without them. I desire to be excused. I will, however, furnish the paper for publication, if it is required or desired.

Secretary Hamilton. Two or three names, perhaps half a dozen, were handed me by Secretary Edge at the time I took charge of the office, that I supposed were acceptances. Instead of that, it seems that some of them had simply been requested to speak, and the acceptances had not been made.

Mr. Kahler. I did accept. I said if it was the request of the Committee, I would read a paper at this meeting; but that he should notify me before the meeting. I had no idea whatever of this until I came to town.

Vice President Barber (in the Chair). "The Home on the Farm," by Howard G. McGowan, member from Berks, Geiger's Mills, Pa.

There being no response, the paper was subsequently submitted and is as follows:

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 THE HOME ON THE FARM.
 

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By H. G. MCGOWAN, Geiger's Mills, Pa.

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The home upon the farm will be largely what we choose to make it. A love for home and for the farm must be inculcated into the minds of the youth, through the gentle admonition of kind and loving

parents. A word of praise, a gentle reproof, a graceful smile (not fault-finding, scolding and hard labor continually from morning until night), will foster a love for "the home on the farm," which, in after years will be revered as the dearest spot upon earth.

God made the earth and filled it with riches and beauty for man to dwell therein. Ages before a human foot ever trod the earth, the Father was lifting up the mountains, leveling the plains, marking out the channels for the rivers to flow and storing the hills with treasures that His earthly children in all succeeding time, might have everything to supply their wants in the great home which He has provided for them, and which we all now enjoy.

It seems to have been in the mind of our Creator that the home of man should be comfortable, pleasant, convenient and delightful. The first home of which we have any account was the home in Eden; here, our first parents were surrounded with everything that was pleasant to the sight and good for food. Home life was then providentially instituted as a necessity for man. It is there, when weary with care from outside trials, that all restraint is laid aside, and both body and soul are refreshed, and often relieved from over physical and mental exertions.

We deem it then the duty of man to gather here a thought looking more towards the home, following the Divine builder of homes, whose thought was for beauty, comfort and rest. Persons who want to know or understand life in all its features must not confine their observations to city life alone. They must go forth into the country and see home life on the farm. The fondness for rural life has had a great salutary effect upon our national character. Some of our nation's best representatives have come from homes on the farm. They have been the recipients of the highest gifts at the hand of our beloved country.

The home on the farm is a pleasing picture. There stands the large stone farm house with its broad gables, overshadowing trees and shady porches, so substantially built that the fierce winds of winter cannot even shake it; but, sturdy and strong, it lasts from generation to generation until even the great, great grand children dwell beneath its roof. The old home on the farm is frequently referred to as the abiding spot of the most tender affections. There the early precepts of character have been imported with honesty, and where parental love is ever cherished in the hearts of her sons and daughters. In this present age people all over this country are seeking for pleasure and the beautiful; and why not get all out of life that we can. We pass through this life but once.

We are becoming a more enlightened race, and year after year we are becoming more thoroughly educated; not principally by becoming proficient in the higher branches of learning and art, but acquiring that taste which enables us to get more out of this life, getting that



which is our privilege to have and to enjoy more fully, the comforts and surroundings of a home.

Superior to all earthly homes is the quiet, restful home on the farm. We may sometimes look, perchance, with envy upon the palatial homes and residences of the rich in our large cities, with all their modern conveniences, and say they are magnificent and supreme. But the advantages that we have over the homes of towns and the city are many. Here we breathe the sweet scented perfume from the blossoms of lovely May and June with all their fragrance, to cheer and inspire the hearts of all, especially the tillers of the soil.

The home on the farm is not generally invaded with mosquitoes, nor filled with the dust of mills and factories, nor is it crowded into a spot upon God's earth of a few feet in dimensions; but it stands out with boldness and defiance upon acres of land, catching the gentle, soft breezes that whisper, "the earth is the Lord's and the fullness thereof." Look for a moment at the many advantages of health, compared to that of those shut up (so to speak) in our cities. The robustness of frame, the freshness of complexion, the healthy digestion, are all due to the open air, where exercise produces a healthful tone of mind and spirit, and a simplicity of manner which even the follies and dissipations of the cities cannot easily pervert and can never entirely destroy.

The home on the farm, again, is well founded and secure. Mills and manufacturing establishments may burn to the ground; the wealth of one-half of a city may take wings and flee, in like manner, in a few short hours. So may we meet with almost the same fate, but, if we should, we have our land, our acres left with all its fruits and fertility, to encourage and inspire.

The home on the farm cannot be well separated from the farm, in a general way; hence, let us consider how abundantly we are supplied with nature's gifts; pure, fresh, cold spring water the entire year, with the fruits of the season in all their freshness; tender and juicy vegetables direct from the garden; pure milk and cream direct from the dairy; good, home-made bread and gilt edged butter; luscious berries in season, and water-melons later on; meats of all kinds free from diseases; ham and shoulder with its good country flavor; smoked sausages, fresh eggs, and so on.

But aside from the things enumerated, that please the taste, and tickle the palate, let us look at that which elevates and feeds the mind, refines and brightens the understanding. Many of our young people of to-day still feel like saying that they are drudging (and slaving, if you please), upon the farm, instead of living, and enjoying the home as is their privilege. The physical is over exercised at the expense of the mental. Work is ennobling and right, but sufficient time should be given, also, for some entertainment, culture and social pleasure, and thereby, make the home on the farm a kingdom within itself and one of the dearest spots upon the face of the earth.

The home on the farm should be an attractive one. Ambition and good taste will accomplish wonders. Perseverance is the only virtue that cannot be counterfeited. It does not at all mean that wealth makes the home on the farm what it should be. Economy and a small sum of money spent in the right direction, will gradually beautify and add greatly to the comforts and surroundings of any home, as well as enhance its moneyed valuation. Beauty costs very little more than that which is distasteful.

We should ever remember that God's glorious sun by day and moon by night, reflect their radiance all the same upon the unsightly, as well as upon the beautiful; hence let us honor Him who so honors us.

When God made the trees to grow out of the ground, it was as much His design to give them graceful forms, to please the eye, as it was to load them with fruit which should be good for food.

The first man was placed in Paradise, not simply to eat of the fruit and rest idly beneath the trees, but he was to dress the garden and keep it beautiful. The branching trees, the trailing vines, the brilliant flowers and winding streams, were all placed under his care to be kept in such order that his home might be called, according to promise, a garden of delight. Therefore, we should make our homes attractive and beautify them, not only making them pleasing to the eye of man, but honoring Him who gave us light, life and the understanding also.

Many homes on the farm could be made attractive and loveable, not by spending from \$150 to \$200 a year, nor by neglecting the farm in any of its avenues of work, but by shortening the hours of work upon the farm fields and devoting a portion of time each day, or every other day, to cleaning up around the barn and residence, removing unsightly buildings, and then plan to enlarge the yard or lawn surrounding your residence, and get it into better shape. This costs but little, and more work can be done in the short time spoken of, than could be done in a longer period, when the body would be so much fatigued, to inquire if the chores were all done, much less think of enjoying a game of croquet or look after the appearance of the buildings and surroundings, which should be the ambition of every farmer.

After the days have been shortened, use a little economy in the purchasing power. Buy a lawn mower; make a new fence; beautify the house by painting it; whitewash the farm buildings (or paint them if suitable), and enjoyment will soon spring up in a different direction. The young people can here take hold of the reformation by keeping the lawn nicely mowed, the grape vines trimmed, the flower beds blooming, the trailing vines trained to their position causing all to love, honor and respect the home on the farm.

Let the work of reformation and transformation go on, until the charms of nature have thrown their mantle of verdure around the new home on the farm.

Again, the external condition of the home on the farm is one side, while the interior is the other.

We will now leave the smooth, green lawn, the neat appearance of the outer surroundings, and step inside. Here should be, in a great measure, the keynote to "the home on the farm." The interior should be, not extravagantly, but neatly furnished. Every agriculturist should be deeply interested in the embellishment of his home. He should interest himself and family further than the concerns of outdoor life. The parlor or sitting room should be furnished with an organ or piano, and music should be the chief feature of the household. The people in this land of ours are lovers of music, whether they be performers or not. If the talent and taste for music be slow, cultivate what there is; and if there be no ability to perform, let the instrument remain for the adornment of the room and for the social pleasures of others.

No investment pays as large upon the farm in the summing up of all things as a few dollars spent for vocal or instrumental music. How cheering and inspiring to the ear of the weary farmer is the sweet strains of the organ, violin, cornet or piano, as he enters his home after a day of fatiguing work. It is a part of his necessary living, as bread is food for the body. Let the young people congregate around the organ, and play and sing, and you want no other receipt to know how to keep the boys and girls on the farm. Plenty of good books should always be at hand. Daily papers, Christian weeklys and monthlys, as well as semi-agricultural journals, should always adorn the centre table.

Let the home be one of sociability, and shun the thoughts of solitude. Let all the surroundings be so harmonious that our thoughts and feelings may be refined.

In conclusion, a modest, neatly arranged home, a place for everything, and everything in its place, where love reigns supreme, where the social influences of life are daily felt, where everything is symmetrical and where a smile is worn, instead of a frown, constitutes the ideal, model "home on the farm."

Vice President Barber. The next subject on the programme is "The Township High School," by Joel A. Herr, member from Clinton, Cedar Springs, Pa.

Mr. Herr. I cannot answer that I have not the paper with me; but I am willing that the Board shall have it, and put it in the proceedings just where they want it. I would prefer to listen to the other papers that appear on the programme.

Mr. Piollet. Please go ahead and read the paper.

Mr. Herr read the paper as follows:



## TOWNSHIP HIGH SCHOOLS.

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By J. A. HERR, *Cedar Springs, Pa.*

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The first duty of the State, after providing for the protection of the lives and property of its citizens, is to look after its educational interests. From the common district school to the State College, every department of education should receive the most careful consideration, and funds enough to adequately carry it on in the most efficient manner.

The country, as well as the cities, should have educational facilities sufficient to enable every child to acquire an education that would fit him to enter any avenue of business that his inclination might seek, or opportunity afford; not a technical education, but one well grounded on which to erect the superstructure of his life work. A thorough knowledge of the English language, of mathematics, of science and philosophy that will develop his thinking powers, and enable him to cope with his fellows in matters of education and public and private business. This should be acquired in our public schools before entering our normal schools or the State College.

The question then arises, how can this be accomplished in the country? The cities and other large centres of population have now these requirements, but the country, with a few exceptional places, have nothing but the common, ungraded public schools in which to attempt this work.

The distribution of the school appropriation favored the large cities, but in the session of 1897 the Legislature, in a measure, corrected this inequality. The cities, still, in their great strength, and because of better organization, get the "lion's share" of the State appropriations for their public as well as private institutions, both educational and charitable, yet grudgingly yield to a just demand from the country for sufficient funds to properly support our public and normal schools, and the State College.

The whole intent of our public school system, as originally devised, was to provide for the poor the opportunities to acquire an education. No higher or more commendable measure could be taken by our State than the education of all her people at a minimum cost, and at public expense, so as to secure an educated citizenship, which in

turn would give our State a foremost place among the States of the Union, in all that pertains to her educational, moral and material prosperity.

To provide the country districts with schools which approach as nearly as possible with those of more populous places, as our circumstances and situations will permit, is the problem that confronts us. This brings us to consider the link which should come between our common schools and our normal schools, viz:

### The Township High School.

It is almost impossible in our ungraded schools to teach more than the ordinary English branches, as reading, writing, arithmetic, physiology, grammar and the history of the United States. The different grades of these classes cannot receive the time and attention that their importance demands. Bookkeeping, algebra, geometry, philosophy, rhetoric, and other advanced studies, cannot be reached. There is no time for music, object lessons and studies of nature, such as are included in the correspondence course of our State College. These might be taught in the township high school with success.

It is a fact that not every township in this Commonwealth is so situated or peopled as to make a township high school practicable, or even desirable, and this fact may be, to some, an objection to establishing it in townships where it is entirely practicable. A spirit of jealousy between townships in a county or sub-districts does no good to anybody, but sometimes is a source of disturbance and dissension that produces great evil to our public schools. The taxes we pay for school purposes should be a willing and cheerful contribution for the public good, and should be so apportioned as to do the greatest good to all. But, because every district cannot have equal advantages, the fact should not militate against those who are more favored, but the best possible arrangements should be made for all.

The day has come when, in our judgment, township high schools might advantageously be established in most of our townships. It should be done as a matter of right, as well as of economy, possibly not always of economy of the school fund, but economy in the aggregate of expenses for education. The great majority of school children in rural districts never attend any but the common, ungraded public school. Pecuniary circumstances prevent them from leaving home to attend school. They seldom get sufficiently advanced in their studies to arouse their ambitions to greater achievements. If opportunity near home was afforded, they might be induced to greater effort. Once established in the township schools and trained there, a brighter future appears before them, and as their needs for a higher education becomes manifest to them, ways are provided for its acquirement.

The economy of township high schools, as compared with normal schools and colleges, where pupils must leave home at an expense of boarding, room rent, tuition, etc., is at once apparent. The daily associations with the home family and the direct oversight of parents, is an item of importance. Pupils are likely to enter the township high school at an age when, if sent from home to school, they are easiest to lure into vicious habits; but if trained in the home school until a little older, they become more self reliant, with habits of life more fixed and better equipped for contact with the world away from home influences. Under our present system many children are sent from home at a very early age, to some extent, forfeiting parental solicitude and care, and exposed to evil influences, mixed associations and immoral tendencies. These lead to vicious habits which often cling to them through subsequent life. These considerations, in addition to the very important matter of educating very many of our youth to a degree to which they would never otherwise obtain, appeal very strongly to us for township high schools. Having said this much about the uses and necessity of township high schools, let us consider some of the objections which may be urged against them.

1. Increase of Taxation. This will occur in some districts where ample room is already provided for all the children who will attend school. A high school will necessitate a new school building, an extra teacher, more school books, fuel, etc. In depressed times this is a serious consideration and a heavy drawback, which no one feels more than the taxable in the rural districts. But this increased cost should be gauged by the increased educational advantages afforded. Nothing is too dear that will pay well in the end. The value of a high school in the township must be measured by its results. In the townships referred to, perhaps there are a number of persons who are at the expense of sending children from home to acquire what they should get at the high school, thus obliging them to expend more money than would pay a teacher at home and a reasonable interest on school property. Then, if the additional advantage of advancing a score of others, who might attend the high school, but whose finances would not permit them attending school from home, as well as the value of parental oversight and home attachments were considered, the real economy might be found on the side of the high school. In a majority of school districts the increase in population and the consequent inadequate provisions to accommodate them, as well as the decaying condition of the present buildings (in some instances), demand the erection of new and more commodious buildings, and the high school will not be an expense which is not already demanded.

2. Distance to be Traveled by Pupils. This objection, in some localities, cannot entirely be overcome, as in sparsely settled townships of large area, having poor roads of little travel, yet even there, the



A point in the fertility of the soil which should not be lost sight of in the consideration of this question is, that not only is all fertilizer lost that is put upon spouty land, but being water-soaked so much of the early part of the summer and often dry and hard as brick in the latter part, it is deprived of its share of that fertilizer so freely furnished by the atmosphere in the form of nitrogen. As the air cannot penetrate the soil when it is full of water, or when baked so hard; nor can the moisture from the subsoil permeate the surface soil in a dry period, as any one can testify who has examined the fine moist soil of well drained land in a period of drouth, and compared it with the parched surface of a spouty field in the same dry season.

Next, how should underdraining be done? There are three general systems, each the pet of some good authority. Each have their proper soil and no doubt were proven to the satisfaction of their authors in that particular soil to which they were best adapted.

First, we name that of digging wells in the lowest part of some flat which has no natural outlet. Frequently a porous strata of soil is found underlying a heavy clay; by digging through this clay, walling up the well and running drains into it from all directions, the entire surface is made porous and friable. When a subterranean outlet is not found, the water is allowed to evaporate from the well or is forced through pipes to higher ground by a wind engine and caused to flow away in open drains through some natural outlet.

The two other methods are somewhat similar, differing only in the direction of the drains. Geologists tell us that the soil is dissolved rock; that it lies in the same form as the rocks out of which it was made, hence in a lime stone or slate region, we are to expect the soil to be in layers, overlapping each other with veins between, out of which the water comes to the surface. While in the gravel, cobble, flintstone or sand region, the soil would be irregular as the rocks and stone are, and in the latter cases we find the water gushing out of a hole in the ground like that made by some small burrowing animal, and spreading out wider as it passes down the slope, it drowns out many square rods of crop in its course. Such streams are easiest collected by running the lateral drains along the hill, giving just enough fall to carry the water to the main drains. Six inches to the hundred feet is sufficient. The mains should be run straight down the hill. This is the most common method, and while very good in its place, we frequently see many rods of drain made upon this plan where half the number would have been sufficient, if the operator had carefully studied the nature of the soil, and run his drains in the right direction. It is claimed by some practical drainers, and with good reason, too, that money spent for the services of an efficient civil engineer is well invested. However, the practical farmer is generally

able to superintend the draining of his farm with the aid of such works on drainage as can be had.

The other method, although but seldom adopted, is by far the most successful and will be found to suit more soils than both the others combined. As a very large portion of our wet lands are found to consist of ravines, basins and brows of some high flat from which the water seeps out through the crevices in the undisturbed subsoil. This method is to run the main drains along the lowest part of the ravine or basin, and have the lateral carried from it straight up the hill on one or both sides of the mains, thus tapping all the crevices or layers of soil at a point three feet below the surface; each lateral will drain a much wider space than if carried along the side of the decline in which case it would tap only a few layers of soil.

And now we come to the manner of digging and the material out of which to form the duct or passage for the water. Although round or pipe tile with collars upon the ends have, for many years, been considered by most practical drainers to be the best material to use, yet many farmers still believe in making their drains of stone, although the latter not only cost more, but make a less durable drain, being more liable to close up. The drain for tile need not be dug so wide near the bottom, and where the subsoil is not a hardpan nor the work being done in a very dry season, it can be done rapidly by the use of a set of draining tools, consisting of two long, narrow-bitted spades and two finishing scoops which can be had at most hardware stores.

It will be urged that where stone is plenty, it is better to use them in underdrains, although they may not last as long as tile; that such drains more than pay the cost and at the same time the stone are gotten out of the way. But while we are complaining of bad roads, would it not be better to arrange with the supervisor at a moderate compensation, to haul the stone upon some bad piece of road which, if covered with gravel, would not only greatly improve the road, but allow the farmer wages for gathering the stone from his own fields and then make cheap and durable drains with tile.

When the ground is very hard we find it a great advantage to use a subsoil plow to loosen the ground and throw it out with shovels. Our plan is to hitch the plow behind the front part of a wagon, and so arranged as to raise and lower at will, and is held at a regular depth, the team traveling one on each side of the drain. From fifteen to twenty rods of drain can be opened two and a half to three feet deep per day by two men. It may be said, that successful farming cannot be carried on in some sections without the following four things, viz: Underdraining, subsoiling, high manuring and thorough tillage; these having been attended to, the farmer need not fear wet or dry weather, as it will do his crops but little harm.



Success in growing good crops depends very much upon having the soil prepared in good time, so that it has become ripe and well settled before the seed is planted, and in the continued and intelligent use of the cultivator for hoed crops. This can only be done on land that is naturally dry and porous or made so by underdraining.

In this connection, it may be well to consider the prices at which tile can be bought and the cost of a finished drain per rod and acre. In ordinary cases, drains should be about forty to forty-five feet apart; this would require about sixty-four rods per acre. Tile are usually thirteen inches long, requiring fifteen to the rod or 960 tiles to the acre.

One and a half inch tile with collars on are sufficient for laterals to collect the water and carry it to the main drains. The cost of these by the car load is \$15.60 per thousand, or about \$11.00 per acre.

According to the writer's experience, the work of underdraining, including tile-laying and filling, can be done at an expense not exceeding thirty-five cents per rod, making for tile and labor \$37.40 per acre. But as some larger tile are needed for mains, we may add ten per cent. to this cost to complete the work, which would make the cost about \$40.00 per acre. Now, according to our estimated increase of five dollars' worth of crop per year, would give us an income of twelve and a half per cent. on our investment.

Of course, the slipshod farmer will look at \$40.00 awhile before he will decide to invest at this rate in underdrains. But the making of one or two short drains in some boggy spot and watching the result, he will be convinced that the investment is a good one.

We have in mind a case where a field of naturally good soil had two very wet patches in it, one of which furnished a home for the bull frog from whence he uttered his guttural notes most of the summer months, was made dry and the site of a splendid crop the following summer by a little persevering work. During a December month about one mile of underdrain was made by the writer, while a less progressive young neighbor with a couple of city chums was visiting, eating turkey and contracting disease from which he was several years in recovering. If any evidence beside the crop as to the wisdom of the work is needed, the remark of another neighbor to his companion as he passed by, "There is a field that shows what underdraining will do," did not pass unnoticed.

I cannot close this paper without calling the attention of those interested in underdraining to the importance of carefully watching the outlets. Many well laid drains are ruined for all time by allowing mud to gather at the outlets and close the drain. Where laterals enter the mains and where drains empty into open drains there should be a fall of one or two inches from the tile, and the outlets of mains should be examined every fall before freezing weather sets in.

We have thus far considered as a reason for thorough drainage only the profit and loss in the case. We will only add a few remarks as to the satisfaction of seeing the ground dry and covered with a healthy growth of clean crop, and to be able to drive over any part of a field in hauling off the crop, and to take your visitors about the premises in an excessively wet season without the annoying apology for the mud and water in their path.

In conclusion, I would say, if your land is wet and you cannot renovate the whole of it, you had better let one-half lie in commons, underdrain and subsoil the other half, give it a liberal supply of fertilizer, till it thoroughly, and you will save the labor of working the vacant half and net more clear money. (Applause.)

#### VISITORS INVITED TO SEATS.

Secretary Hamilton. We have with us Major Alvord, the Chief of the Dairy Division of the National Department of Agriculture. We have also with us Hon. Franklin Dye, the Secretary of Agriculture of the State of New Jersey. I move that these gentlemen be invited to seats in this Board as advisory members, and to participate in the discussions.

The motion was seconded by Mr. Critchfield and unanimously agreed to.

#### TILING.

Mr. Stout. I do not think it is justice to an essayist to let his paper be read, and not add anything in addition to it. I have just drained two acres of land, and I paid four cents a foot for three-inch tile, and paid a cent and a half for the laying of the tile, with three men on the drain, costing about the same. So that the drainage of two acres at these prices cost \$90, or \$45 an acre. The question in my mind was, would that land be worth anything to sell? But I had the land, and had to pay the taxes on it. I believe it was best, because it is cheaper in the end to drain it, and grow good crops on it, than to leave it the way it was.

Mr. Critchfield. I would like to ask the essayist one question about the collared tile. Did he try the plain tile, or was it set in?

Mr. Murray. That paper was written about two years ago. At the present time I use nothing less than two inches, and no collar. With this draining scoop, it makes a place for the tile, and it cannot get out of place.

#### COMPOSITION OF SOIL.

Colonel Henry C. Demming. I expected that the gentleman from Schuylkill (Mr. Stout), who has the reputation of being the practical geologist of the Board, would correct a statement made in the essay,

relative to all soil being made up of decomposed rock. Soil is composed partly of decayed vegetable matter, and the remains of insects and animals. Then there is continually falling on the earth, minute particles of dust that come into our atmosphere, possibly from other worlds than ours, and investigation has proved that the amount in a few years is surprisingly large. Then all water contains more or less solid matter, and the atmosphere takes up from the ocean quantities of solid material (as probably microscopical parts of Rhizopods of the species *Globigerina*), that is deposited, though in minute particles, over the face of the earth. It is true that soil comes largely from decomposed rock; but a goodly part of it is formed from other substances. (Applause.)

Vice President Barber. The next paper is entitled "The Work of the State Live Stock Sanitary Board," by Dr. Leonard Pearson, State Veterinarian, Harrisburg, Pa.

There being no response, it was agreed that the paper, if submitted, should be published in the proceedings.

Vice President Barber. The next topic is entitled "The Life Histories of Insects as a Guide to Their Treatment," by Dr. H. T. Fernald, Economic Zoologist, Harrisburg, Pa.

Dr. Fernald. Mr. President, The hour is so late that I should be very much obliged if this paper were read by title.

Mr. Critchfield. If the writer will not misunderstand me, I will move that this paper be read as requested by the author, and published in the proceedings.

Dr. Fernald. In that case, I would like to express to the Board of Agriculture my appreciation of their continued kindness and support which they have shown me in the work which I have been carrying on during the past year. This may perhaps be the only opportunity I shall have to express to you my deep sense of the cordial support and good wishes which I have at all times felt.

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## THE LIFE HISTORIES OF INSECTS AS A GUIDE TO THEIR TREATMENT.

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By DR. H. T. FERNALD, *State Economic Zoologist.*

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Economic Entomology is practically a new science. In the earlier centuries the destructive raids of insects were looked upon as divine

visitations, against which it was both useless and wicked to struggle. The only relief available, was that of divine interposition, as is vividly illustrated by the pleadings of Pharoah with Moses, as described in Exodus. That this same feeling is still present, is shown by the fact that in 1875, the Governor of Missouri appointed a day of fasting and prayer for the aid of the Divine Being to check the suffering caused by the Rocky Mountain Locust; and in 1898, a Pennsylvania farmer, when urged to save his fruit from insect ravages, objected, saying, that "God had sent the bugs and man had no right to oppose His will!" Indeed, the paper of May 10 of the present year published the following:

"A remarkable demonstration took place at St. Hilare, Que., yesterday. Caterpillars, which last year played havoc with apple and sugar orchards, seem to be more numerous and vigorous than before. A crusade against them was formally opened in the parish church, where mass was solemnized, after which a religious procession, headed by the priest, and the choir boys, followed by 150 or more parishioners, marched through the infected section, with fervent prayers, asking Divine assistance in their battle against the plague."

During the middle ages a somewhat different idea was sometimes met with. In some cases, legal action was taken against the insects, which were summoned to appear at stated times and places and plead their cause. Upon their non-appearance, a representative on their behalf was appointed, and the case was tried. The verdict being against them, the sentence of excommunication was pronounced and was supposed to have been carried out when the insects disappeared. Some of the early writers, however, took a more rational view of the situation, and suggested the use of remedial measures; but with a few such exceptions, little was done in this line before the present century; though when once the idea was fairly grasped that insect pests deserved no greater consideration than rats, mice and other vermin, little was needed to develop the possibility, at least, of a successful treatment of these foes of mankind.

It is fortunate that a systematic study of insects was not also checked by religious or other beliefs, but was prosecuted for many years before the economic side of the question was developed; in fact, it was in a measure, the existence of this research which made Economic Entomology possible; for it has been found that the treatment of an insect foe is, in every case, determined by its structure and habits, and the life-history it passes through. This fact cannot be too strongly emphasized. Had it not been for this, the Economic Entomologist would have been obliged to first work out the facts, many of which, instead, were already published and at his disposal. As it is, he no longer examines the mouth parts of a grub, to determine the way in which the insect feeds; simple recognition



of it as the young of a beetle is sufficient to determine that point, for it was shown years ago, that beetle larvae have chewing mouth parts, and he is free to turn to the unsolved parts of the problem at once.

Economic Entomology in America, practically, began with the work of Dr. T. W. Harris, whose Report on the Insects of Massachusetts Injurious to Vegetation, which appeared in 1841, marks the beginning of a new epoch. Of this book, one writer has said: "It has saved millions to this country, and has been received with enthusiasm in all the countries of Europe. It is an imperishable honor to Massachusetts."

The reports on insects by Dr. Fitch, published in the Reports of the New York State Board of Agriculture between 1855 and 1872, are also of incalculable value, while the work begun in Missouri in 1867, and ending at the Department of Agriculture at Washington in 1894, by Dr. C. V. Riley, stands as a colossal monument to the industry and ability which played such an important part in the development of Economic Entomology in this country.

As we pass to the later years, the list of workers in this field becomes very large. Nearly every state in the Union has contributed to the work, except Pennsylvania. Here, however, for some reason which I cannot determine, almost nothing has been done; a careful examination of the Reports of the Board of Agriculture showing only a few scattered papers. However this may be, at the present time, the United States leads the world in this study, and her students are being called to other countries, both as permanent residents and as visiting experts, to supply those lands with the knowledge and experience which they have acquired here.

In Economic Entomology itself we find three questions being constantly asked. They are: "What is it?" "What does it do?" and "What shall I do for it?" The answer to the first of these questions is frequently easy, though the enormous number of insects sometimes prevents an immediate answer being given with certainty. To the second and third questions the answer always is: "That depends on its structure, habits and life-history." It has been found that a few general principles are, in most cases, to be relied upon in the treatment of insect pests; but individual peculiarities of habit often come in to modify the advice which would otherwise be given. Thus the apple-borer is a chewing insect, and the general rule is to use a stomach poison, such as Paris green, with chewing insects. Here, however, such advice would be absurd, and from this it is evident that a knowledge of the life-history and habits of the insect must in each case be known, if the best method of treatment is to be recommended.

In brief, the life history of a moth is as follows: The adult moth

deposits its eggs in the usual place, either on the leaves or stem of the plant which is to provide food for the young, or wherever its custom may be. These eggs remain in this condition for a varying length of time, but in the end, the shells open, and from each escapes a little caterpillar which proceeds to feed. As it feeds, its skin becomes too small for it, and this is accordingly shed, a new and larger one forms, and the feeding continues. As the caterpillar goes on growing this process of molting, as it is called, is repeated, the usual number of molts being four or five. A time comes, however, when the caterpillar becomes full grown. It then stops eating and begins to wander about in search of a place where it may undergo its next change. This place may be on a twig, on the trunk, under leaves or other rubbish, or in the ground, according to the habits of the particular kind of insect considered. If the location be one above ground, the first thing which is done is, usually, the spinning of a silken case or cocoon which serves as a protection to the insect within. Inside this cocoon a striking change now occurs. Within a few days after the completion of the cocoon, no trace of the caterpillar which formed it will be found, except a shriveled up molted skin; most of the space within is now occupied by a brownish object, having a cylindrical outline, with one end rounded and the other pointed—the pupa. This pupal stage continues for a length of time varying according to the kind of insect concerned, after which a hole in the cocoon appears, through which the adult moth escapes, the life history from adult to adult having now been completed.

Thus far the life histories of all moths agree, but in details important differences appear. In some cases an entire year is necessary to complete such a single life cycle while in others three or four may be finished in the same length of time. Thus we find three broods of the army worm in a year, but only one of the tent caterpillar. In determining the best treatment for any given insect these facts must receive consideration. That the insect exists at all, is an evidence that it is protected to some extent, at least, against its foes, and in order to successfully combat it, the period in its life at which it is most vulnerable should be found, and the attack made at that point, unless time and money are to be thrown away.

If we contrast the life history of a moth with that of a bug, for instance, we find quite a difference. The eggs laid by the adult bug, on hatching, produce forms considerably resembling the adult except for the absence of wings. These young do not in any way resemble caterpillars, and are called nymphs. They feed, grow and molt, at each molt more closely resembling the adult, and in time they become adults without passing through any quiet pupal stage. In the case of the moth the injury is done while in the caterpillar state, the adult rarely doing any damage. The bug, however, feeds from the

time it hatches until it dies and thus is injurious throughout nearly all its life. Its method of feeding, too, differs from that of the caterpillar. While the latter bites off its food with its jaws and swallows it, the bug, having no jaws, but a sucking tube instead, makes a hole in the plant and sucks the juices from within.

Taking the cases of the moth and bugs as types, we may divide insects into those having jaws, and which accordingly bite off and swallow pieces of food, and those which suck out the plant juices for their use. For those which chew their food some poison which can be placed on the food and be taken into the stomach of the insect, may be regarded as a standard method of treatment, but for the sucking insects such a procedure would avail nothing. Accordingly for these, the contact poison has been devised—a poison which kills every insect which it touches. These may be regarded as the fundamental principles of treatment as they exist to-day.

But even methods such as these are very far from having universal success. Spraying scale insects with the contact poison kerosene emulsion, is wholly useless unless it be done at just the right time. During the greater part of the year the insect is covered with its scale, which is so resistant that the emulsion is unable to penetrate it and destroy the insect beneath. Here a careful study of the life history of the scale provides the key to the proper method. During the winter the eggs of the insect lie beneath the scale. About the first of June, however, these eggs hatch and the scaleless young travel about over the tree seeking a place to locate. When this is found, they settle down and begin to feed on the juices of the plant and also to produce scales for themselves. After a short time these scales become hard and as resistant as that of the parent. From these facts we see that during the month of June is the time to spray with kerosene emulsion to destroy the scale insect. But even this is not true of all scale insects, some of which, like the San José Scale, give birth to their young alive and continue this during quite a long time. To treat such cases as this with kerosene emulsion, it would be necessary to spray the infested plant thoroughly every few days from June till frost appears in the fall. Accordingly, treatment with whale-oil soap or with pure kerosene—materials strong enough to work through the scale and destroy the insect beneath—are now used in such cases with good success.

Even when from the nature of the mouth parts of an insect, a feasible method for its destruction can be selected, it is generally advisable to seek for the vulnerable point in its life history, as it is not unlikely that some peculiar habit may appear, which can be made use of to even better advantage. Thus, the Tussock moth can be controlled by spraying the trees with Paris green or some stomach poison; but if the size of the trees be taken into consideration it will



often be found to be a difficult task to do this well. The life history of the insect, however, is such as to give opportunity for its easy control. The cocoon is formed on the trunk or larger limbs, and the female moth which escapes from it is wingless. Apparently recognizing the fact, it does not attempt to crawl up the limbs of the leaves to deposit its eggs, but places them in a small mass covered with a whitish secretion, on its old cocoon, where they may be plainly seen from distance. The picking off and destruction of these egg masses before the caterpillars hatch and scatter over the tree in search of food, is a much cheaper and more effective process than spraying would be after the caterpillars have dispersed.

A comparatively recent discovery of a hitherto unknown habit of the Codling Moth, has to a large degree, aided the fruit grower in controlling this annoying pest. Feeding as it does, inside the apples, it long seemed impossible to find any way in which to prevent its ravages. Careful study of the life history of the insect, however, showed that it has a habit which, unfortunate for itself, is most fortunate for the apple grower, for it enables him to destroy large numbers of the caterpillars before they enter the apple.

The eggs of the Codling Moth are laid anywhere on the fruit, on the twig to which the fruit is attached, or even on some nearby leaf. When the eggs hatch, the caterpillars pass to the apple, and—fortunate habit—about three-quarters of them choose to begin eating into the substance of the fruit at its blossom end. As at this time the blossom end of the apple is facing upward, the depression there acts like a little cup, holding any stomach poison which may be sprayed over the tree at this time, and in consequence, when the caterpillar attempts to enter at this point, his first meal is his last.

Many other examples of this kind could be given, but enough has been said to demonstrate the importance of a careful study of the life history of insects. Future advances in methods of treatment will come as the result of studies along this line, and it is much to be regretted that our knowledge of the subject is still so limited. The Grain Aphis is frequently the cause of much loss, yet no one has as yet discovered the male insect; the number of broods a year of some insects may vary within the limits of a single State, and until the exact number is known for each locality, directions for treatment cannot indicate the times at which that treatment should be given. Even the methods of controlling insects differ in different places. Those used successfully against the San José Scale on the Pacific Coast, have proved entirely useless in the East; treatment for the Rose Bug which seems to be satisfactory in Ohio, is a failure in New Jersey, and examples of this kind might be multiplied almost indefinitely.



For such reasons, therefore, a careful and exhaustive study of the life histories and habits of all our injurious insects, is much needed; for at any time the discovery of a new feature may lead the way to a new method of controlling the ravages of some insect, or at least, the substitution of an improved treatment in place of one which was at best unsatisfactory. No man can tell whether even the smallest addition to the store of human knowledge, may not lead to the greatest of results, and in the field of Entomology opportunities surround us all for the making of discoveries, the importance of which none can foresee.

Vice President Barber. The next topic is "Taxation and the Farmer," by Hon. William T. Creasy, Catawissa, Columbia county, Pa.

(No response.)

Mr. Stout. Inasmuch as we have adopted the motion relative to topic No. 11, to be read by title, I move that we dispose of the remainder of the topics before the convention in the same way, and adjourn.

The motion was seconded by Mr. Critchfield, that the papers be considered as read, and that they be printed in the Bulletin.

The paper entitled "The Application of Local Taxes," by Hon. Samuel R. Downing, West Chester, Chester county, Pa., and the general question, "How Can We Obtain Equalization of Taxes?" were included in the papers not read, or the topics discussed, and the motion, as amended, was agreed to.

At 5 o'clock P. M., adjourned to 7.30 o'clock, P. M., to meet in the Normal School auditorium.

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## APPLICATION OF LOCAL TAX MONEY.

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By HON. SAMUEL R. DOWNING, *West Chester, Pa.*

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Are our local, borough and township tax moneys expended in such manner that the taxpayers receive full measure of value therefor? The question can only find answer in the extent of interest that the taxpayer may feel in the appropriation to public moneys paid by him and expended by public officers. The citizen is careful, however, that his children are punctually and steadily at school, as a rule. The teacher ably assists in this, by giving him credit in the public press

for the best attendance. The citizen is eager to haul out his road tax. But here, as to all, in perhaps many townships, the zeal and interest reaches its limit and stops. And yet complaints may go on, complaint without thought or investigation, and therefore, perchance, unjust.

A grand jury may by the advocacy of court officials, attorneys and townspeople, decree a new court house. How silent and inert are the county taxpayers. The main expression on their part seems to be of complaint as between pairs of neighbor farms, meeting casually. If the county rate is increased one mill, I as a citizen, for illustration, must pay \$20.00 additional to the former tax. Then, on a visit to to my neighbor, I may say that it is an outrage. He may agree with me and that is all. Intelligent, united and popular investigation or expression only can reach grand juries or the public print.

Let us trace the matter further. We are sufficiently wise to elect good men and women as school directors. They serve without compensation. The relation of the taxpayer to the director and the school itself is, alas, notably indifferent. The taxpayer is hardly even seen in the school room, even when the County Superintendent is present. It may be that my reference fits Chester county rather than Lancaster. If so, excuse me. But the taxpayer, in passing the school house, sees a heap of coal ashes unsieved, and exclaims, "What waste of taxes!" The complaint, perhaps, spreads, despite the fact that it may cost the worth of the coal to riddle it. On the other hand, cases come to light that are, I am glad to say, exceptional, where home teachers have been excluded and poor, foreign teachers employed, in order that some director may have the advantage of boarding the teacher. This is surely a waste of tax money. And yet, all things being equal, the home teacher, having fair play with the foreign, the foreign teacher being chosen, because superior, the chance of boarding should, in equity, belong to the director who studied and worked for the public without fee or reward. And yet, these are valid objections.

At this time comes the question of township high schools. The School Directors' Association of Chester County has declared in favor of such schools. Have we a taxpayers' association to discuss or say yea or nay? The voice of the individual business man, citizen, farmer or taxpayer is no more heard in the land. The voice of association or federation, township, county, State and national, is only heard. Thus mercantile, corporation, legal, political, professional, teachers', directors', and, if you will allow me, Grange associations are heard. This is probably right and good.

If taxpayers have a surplus of money in the pocket or bank, clear of obligations, there is no better investment than a high school. That, mark you, will actually return value for value. But suppose we are under the burden of toiling to pay interest and to hold the home farm

free of mortgage, can we risk even the item of an additional high school tax, knowing that the sum total of yearly money needed by us is made up of the multitude of small bills that we must pay. Still, as citizens, we must even deny ourselves of one or a number of the few luxuries of life that remain to us, in order to educate the children of our township. So that this question of high schools calls for thought upon the part of taxpayers as to what they will cost in money, and what they in return will do, additionally, to the primary, to make the children better and more learned. Are we thinking about this or are we leaving it to the directors' convention to determine whether the high school is equal in merit to its cost in money.

Suppose I state a case very familiar to me. For three terms I served as school director, now over nineteen years ago. During the last term, we built a two-story school house, intending to place a grammar or high school in the second story of this new central school building. We were too progressive, it seems, and were defeated for renomination. The high school did not, at that time, materialize. Why did we build as we did? Simply because there were but two school houses owned by the district, three teachers, and in the neighborhood of 200 children; and because, further, as naturally follows, there was a waste of tax money, for the reason that no teacher could keep in order and teach to the full value of the tax paid, from 60 to 70 scholars. Although defeated, still in behalf of the township and ourselves, a few of us, afterwards, hired a Swarthmore graduate and started a private school in a carriage house loft, and some of our students went from that loft into the Sophomore classes of excellent colleges. We relieved the township schools, but were spoken of as "silk stockings." Last year, 18 years after, a high school was started upon the same necessity that we had urged many years gone by. True, there is much fluctuation in the number of scholars from year to year, but taking the average attendance during these 18 years there was evidently much tax money lost by overcrowding the schools of our township. As to the abandoned room, the Grange rented it without interference in law and in 17 years paid over to the township more than the additional walls, doors, windows and chimney cost.

Take another view. If a home school, as the one I have cited, can equip a student for the Sophomore class of a college, why cannot a fairly attended primary school equip scholars for the Freshman class of a normal school. In years when our primary schools have been small, my own township has entered pupils in the Freshman class of the West Chester Normal School. Again, look at another fact. The mother of a teacher recently told my wife that her daughter came weeping from school, saying that the directors had transferred her most interesting class to the high school. This was for the purpose



of furnishing pupils for the high school. The young lady was naturally grieved, being ambitious even to equal the higher school, but in that her pupils had not reached the admission grade of the high school and the grade had to be lowered to rob her of her students. She called it, simply, stuffing the high school. Thus many matters enter into the local question whether or not high schools will compel a waste or a true investment of tax moneys. My own township, it seems to me, pinched the coin until the eagle screamed, over the consequent loss of tax money, by not utilizing 20 years ago an upper story that cost so little, and thus turning out far brighter and better boys and girls. But the case may be different in other townships and counties.

What is wrong about it all, I think, is, that we do not discuss and "find out," but simply kick one way or the other. The director, after all, may know better than we, being posted more thoroughly as to the contemporaneous educational needs of a township and its resources or wealth. All that, perhaps, comes to our knowledge and brings us no concern, may be but the childish tales of "scrimmages" and assortment of little school scandal brought home by the children. Is this not too true? If not true as to this section, I must beg pardon. But if true, you are but in line with a multitude of school districts. Thus, learned and conscientious directors may be placed aside and tax money wasted from want of knowledge as to the economic application of local tax moneys.

Again, we should not lose sight of the fact that taxes properly applied means, an investment for the people, as fully as money paid by the farmer for the wind engine that forces water from the spring to the barn, or for the binder that cuts and sheaves his wheat, means a paying investment for him. A raise of one mill in tax may save the equal of two mills lost in the improper maintenance of roads through an inadequate tax. An addition of a mill in tax, borough or city, may save the equal of two mills loss in bad gas, in robbery or disorder. While on the other hand, an economic application of taxes may reduce the levy from two mills to one mill. Tax economy, even as to silent, lowly townships, is a pleasing and profitable study to every taxpayer who may take an honest, fair hold upon it. It is further, a patriotic study to do so.

A mineralogist finds a rare stone and is elated over it. Read your township's account of forty years' expenditure of tax moneys in annually throwing dirt in the middle of roads to be washed away by early rains, and I think you will be interested. Add up the forty annual disbursements, and I think you will be astonished. Thoughts will grow and multiply, and there will follow a mental search as to what can be done to stop the waste. I hazard this guess.

What did we find in the blue book of East Goshen? Simply a

record of \$36,000 expended in a small township in thirty years, with an equivalent to the value of but \$500 in assets, together with the bogs and quicksands of our fathers still on hand, to worry and waste a trade and travel that has quintupled in the three decades. More than this, our tax had grown until it touched \$2,000. As a sequel of this canvas of our money waste on dirt roads, we macadamized nine miles of our worst and most traveled thoroughfares.

Perhaps, conditons may be different here. Your thoroughfares may already be piked, your soil may not be bog, mire or quicksand, and I do not know how this may be. But there have been plans suggested and tried, by which money can be and has been saved in the repair of dirt roads. In seven days we can repair our remaining and but little traveled dirt roads, twelve miles in extent, by use of the scraper and some shoveling, at a cost of \$75, and by selecting supervisors who can make as much, if not more money, at home than upon the roads. Our small plank bridges have been replaced by iron pipes, which is also a saving.

In our township we have found difficulty in electing proper men as supervisors. Thus, being up in road matters, having gone through a struggle for reform, we keenly desire a law that will create a board of supervisors similar to a school board, and without pay, with power to appoint supervisors, fix the per diem, disburse money upon warrants, designate and supervise the work.

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### THIRD SESSION.

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Wednesday Evening, May 31, 1899.

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The Board reassembled in the Normal School auditorium pursuant to adjournment, Vice President Heiges in the chair.

Prayer was offered by Ex-Senator N. B. Critchfield, of Somerset.

The orchestra of the Normal School rendered in a very creditable manner a patriotic medley.

#### THE WELCOME TO BLOOMSBURG.

The Board was welcomed to Bloomsburg by Hon. W. O. Holmes, Mayor of Bloomsburg, who said:

Mr. President, Ladies and Gentlemen: It gives me pleasure to wel-

come to Bloomsburg the members of the State Board of Agriculture, and those attending from other places; and in so welcoming you, I represent the sentiments of every resident of this community. It is needless for me to say, that in the calling which you represent, rests the foundation of our prosperity. I trust and believe that whatever is said and done at this meeting of your Association will result in our general good. I am informed that this may be the last meeting of this organization. If this be so, it seems to me there has been a great mistake made in not providing funds for its continuation in active life. I trust a way will be found by which the organization will be kept together. Hoping that you will be so well impressed with our town that you will come again, I now turn you over to the tender mercies of Mr. H. V. White. (Laughter and hearty applause.)

H. V. White, Esq., member of the Board from Columbia county, said:

Mr. President, Ladies and Gentlemen: The part of the printed programme reading "Response, by H. B. White, member of the Board from Columbia county," seems to me to be a misnomer. Living here with our Mayor, I feel it my duty to enlarge upon what he has said to you in the way of a welcome and to urge that every member of the Board here to-night shall feel that he is at home with us here in Bloomsburg; for he has come to the county seat of one of the finest agricultural counties in Pennsylvania; he has come to a town that is interested in every phase of the subject of agriculture—interested because we are living or subsisting very largely upon the money that may be made from agricultural products. Our manufacturing interests are comparatively small; yet those interests are deriving their support from the agricultural section, and we realize this fact. We realize fully also what we owe to these gentlemen. We are ready, and shall be anxious to hear from you all that we can that will help to build up the interests of this community.

I am sorry that there are not more of our people here, to hear what may be said this evening by the members of your body. I would state that the exercises incident to the closing of our high school, and the free schools in the town this week, are keeping the citizens away, at least in part, from our meetings. Then there are other interests that have caused the absence of many farmers from the session. I hope those absent to-day will be here to-morrow, to derive the benefits of such a valuable convention.

I want to extend to you again a most cordial welcome, and to say that the citizens of the town and vicinity will do all in their power to make your stay comfortable and pleasant while here. (Applause.)

Vice President Heiges. It is scarcely necessary to introduce to this audience Dr. J. T. Rothrock, Commissioner of Forestry of Pennsylvania, who is on the programme this evening to deliver an illus-

trated lecture on the subject "What Forestry Is, and What It Can Do for the State." (Loud applause.)

Dr. J. T. Rothrock then delivered his address as follows (using a large, white screen, upon which were thrown the enlarged pictures of the localities described, adding much to the interest of the lecture):

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## WHAT FORESTRY IS AND WHAT IT CAN DO FOR THE STATE.

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By DR. J. T. ROTHROCK, *Commissioner of Forestry.*

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When England came into possession of India, she found a country densely populated and fertile, which had been exhausted by management under a system of oriental extravagance. Famines were frequent, the population was ignorant, there were no public improvements which we would recognize as such. Industries were paralyzed and personal ambition on the part of the individual to rise to a higher level could hardly be said to exist. The India of to-day is a wholly different country, under the wise government which England usually bestows upon her colonies. Public improvements have been created, ambition fostered, and some of her waning industries completely restored. The improvement is especially noteworthy in relation to the timber wealth of that country. Formerly, the forests were destroyed without any regard to their relation to the state or to the future. Their extinction was in sight when England assumed control of India. To-day, under the wise government of Sir Dietrich Brandis, a perfect system of forest management has been inaugurated. This has been a source of revenue to England and a blessing to India, because of the assured perpetuation of her large timbering industries. The Teak Forests, especially, which were among the most important sources of industry, were threatened with early extinction and with a corresponding loss to the country and to the population. They are now under such control, and their restoration is now so far advanced that their perpetuation is assured.

A part of the Adriatic portions of Austria where we might well have expected better things, to-day show a condition of affairs actually as deplorable as that to which India was tending. Extensive areas have passed into a condition so impoverished that the name of the Karste or desert has been applied to them. In the not distant past,



however, they were fertile and flourishing; from them Venice, in its palmier days, received much of the lumber which was used for the purposes of construction there. When the demand made upon these provinces by Venice ceased, Holland continued the lumber trade and exported from the same region a large portion of the lumber which she required. England continued the trade until the forests were exhausted; the rain swept over the desolate hills, the sun parched the vegetation, and the bands of famished goats destroyed not only the plant life which was above the ground, but pawed out the roots and so ended the chance of survival of any forage for the ensuing seasons. The facts concerning the French provinces of Gascony and Gironde, have been so often repeated that it is unnecessary here to more than mention that portion once fertile and productive, sources of revenue to the government became deserts in character, impoverished in soil, and a burden to the State, until their prosperity was restored by a renewal of the forests. This was accomplished at a great cost, and as a measure of public policy, has already warranted the expenditure of money which the restoration required.

Coming to our own shores, the State of Maine has furnished, in a measure, an example of the dependence of prosperity upon lumbering industries. While that State was in the midst of its white pine lumbering, it maintained a flourishing export trade. Scores of trim little sea-going brigs nestled alongside of the wharves of Portland, received their cargo of lumber, carried it to the West Indies, and brought back as return freight, the sugar and other products of those islands. As the pine forests of the State disappeared, the export trade diminished until ten years ago, the wharves of Portland seemed abandoned, in comparison with their early activity. Time does not permit us to go into a fuller description of what forestry has done for other countries and other States. Enough has been said to warrant us in explaining what forestry is, what its duties are, and how they may best be accomplished. Forestry does not mean, simply, tree production; it has nothing to do with the propagation, care, or culture of fruit trees. That is the field (and a most important one) of Horticulture. Nor has it anything to do with the care or reproduction of ornamental or shade trees, or their growth along streets or in parks. This is very important, but comes under the head of landscape gardening. Forestry concerns itself with the growth, multiplication and care of lumber-producing trees. That forestry is most successful which produces the largest quantity of the best lumber in the least possible time, and at the least expense, on ground which is not capable of producing a more lucrative crop.

From this definition you will observe that forestry is a practical art—not a mere fad. The forester may be, indeed must be a lumberman, but it does not follow that the lumberman is of necessity a for-

ester. For the forestry service of Germany, men are trained by the government as we train men at West Point or at Annapolis for a life of service in the army and navy. After a rigid examination, if successful, they are placed in the service of the State to remain there during life, or until pensioned by reason of old age or physical disability. We merely allude to this to show that forestry is to be regarded as a profession which requires training to become successful in.

One result of such a system of instruction is, that Germany to-day owes a large part of its strength to the income received from the State forests. The latest authoritative statement which I have had access to showed, that Germany was receiving from her government forests, about twenty millions of dollars a year of clear profit. It is safe to say that if our waste lands were owned by the State and as carefully managed, that year after year we should receive at least ten millions of dollars clear revenue. I do not make this statement at random, but after a careful consideration of the question.

The above estimate does not include any of the other advantages to which I shall allude later, but simply the market value of the products. Naturally this prolific climate offers, spontaneously, to restore the timber growth over a very large portion of our stripped area. There is but one reason why this is not now accomplished, or being accomplished. That reason is, the fires have nearly destroyed, or seriously weakened each year, much of the young growth. If we can solve this problem of how these fires are to be stopped or diminished, to the same extent, we will reclothe every naked, uncultivated area in this State with timber; though, here, let me say that even if the fires were stopped, our natural forests would still lack much of producing either the quantity or quality of the timber which is now produced in woods that are under the care of a successful forester. The largest yield of timber ever produced on an acre in this State, by the natural forest is very frequently exceeded in quantity by the product of an acre in a German forest. The scientific care and cultivation bestowed by the professional forester makes this difference. Under equal care here, we should expect a larger yield from the Pennsylvania forest.

THE ACT OF MARCH 30TH, 1897, RELATING TO THE PROTECTION OF  
WOODLANDS FROM FIRE AND ITS RELATION TO THE COMMON-  
WEALTH.

After more than a century of forest fires which were, to the last degree, destructive of the woodlands of the Commonwealth, and which were a source of wonder to other civilized nations that we tolerated them, the Legislature of 1897, passed an act which made constables, ex-officio fire wardens.

The passage of this act was the culmination of a prolonged agitation by the friends of forestry. For years they had conducted a campaign of education, by which, at last, the passage of the act was made possible. Public sentiment voiced itself when the vote was taken, that made certain some concerted measures looking to the suppression of the evil which had become a menace to the prosperity of the Commonwealth and placed the responsibility of the work into hands which could be held responsible for any failure to attend to the duties.

Pennsylvania was not the first State to assume this task. There were others which inaugurated a fire warden system. To have created a new set of officers specially for this duty was, because of the expense involved at a period of great financial depression, not only unwise, but impossible. There was, therefore, nothing to do except to utilize officials already existing and recognized as having authority. After a full consideration, it was decided that the most available forces at hand were the constables.

In order to give them ample strength to accomplish the work, they were authorized to call out a *posse* from the township, and both the constables and the workmen were to receive fair payment for the labor done, the State assuming half of the cost and the county the other half. It should be distinctly observed, that in this compromise, the State was coming to the rescue of the counties by assuming half of the cost of a work which the counties, in self protection, might have been expected to do without its aid. For years a law which is more burdensome to the counties, has been in successful operation in Maine.

This law became operative on the first day of January, 1898. It has had a trial of but a little over a year. But little attempt has been made to rigidly enforce its provisions, beyond informing the proper authorities that it was now legally operative and that the State was prepared to assume its share of the pecuniary responsibility. The reason that it was not more stringently enforced was, that creating no enemies, it might of itself, commend itself to the wiser portion of our citizens by its own beneficent work, in those regions where it was observed. It was the design of those most interested in its operation to make it helpful, rather than burdensome.

This, then, may be the proper place to institute some comparisons between losses from forest fires ten years ago and losses at the present time. From 1879 to 1889, the losses from forest fires averaged, under the most conservative estimate, not less than one million dollars annually. Many of those who were best qualified to judge, placed these losses at a higher figure.

In the year 1896, this office, was in a position to give a fairly exact statement of the losses from forest fires and to indicate the localities and occasions of each one. Our summing up will be found in our



report for that year. Without going into details, let it suffice to say, that the total money value of all property destroyed by such conflagrations was placed at \$557,056.00. This was the result of a careful, systematic inquiry over the entire State for all the facts of the case. A still more complete canvass of the Commonwealth for forest fire statistics was made in the year 1897. The result was to show that the losses had decreased to \$394,327. The full facts of the case will be found in the Annual Report of the Forestry Division for the year 1897.

Up to this point, there had been no efficient fire laws operating in Pennsylvania. Public sentiment, however, had in the previous ten years been crystallizing about the idea that these losses were exhausting to the State and unnecessary and should be ended. All of the good that had been accomplished up to the end of the year 1897 was the result of this conviction and of the outspoken opinion that further tolerance of them would be criminal.

At this juncture, January 1, 1898, the laws enacted in 1897 went into effect. Up to this writing, the full facts for the year 1898 have not been received. We are, however, in possession of enough material to safely venture the statement that the losses from forest fires during the year 1898 were not above \$250,000. It would then seem, from the above, that there had been a decrease in ten years from \$1,000,000, down to \$250,000; or, in other words, a saving to the State of \$750,000 for the year 1898. This is something to be proud of, and certainly so when we note that it cannot be the result of chance, because the decrease has been a gradual one, and must, therefore, be the result of some efficient cause.

The spring of 1889 was, just before the trees came into full leaf, an exceedingly dry one over most of the State, for from two to three weeks there was absolutely no rainfall. The consequence was that in certain counties the loss from forest fires was more than usually severe. This was unfortunate; but no law of human creation can ever effectually prevent the operation of physical causes. Immediately from several parts of the State came the report that the new fire law had, by paying for the suppression of these fires, actually increased the evil it was designed to diminish, because the wages earned by those who fought the fires, stimulated some evil disposed persons to start them. This statement has been publicly made and widely circulated by some influential newspapers of the State, and several of them have actually gone so far as to assert, that because of this incendiary influence the law should be repealed.

It is worth while to briefly consider this report. It is either true or not true. There is no medium ground. We can hardly suppose that those reputable citizens who first started it and those reputable papers which circulated it, would have done so unless they knew positively that their allegations were true. If then they have the

knowledge of the facts, it is their duty to their neighbors and to the State, to come forward and place the guilt on the guilty parties by trial for which the law provides. We take them to be good citizens, who would not willingly become participants in the crime of incendiarism by withholding from the proper officers the names of the parties upon whom their suspicions rested.

We call upon those, then, who are in possession of the facts to be brave enough to make them known, that the innocent may be protected and the guilty punished. It is as much their duty to do so as it would have been to have warned, in advance, those who suffered losses by such fires if it had been previously known that the woods and mountains were to be made the scene of conflagration.

We will not venture to deny that there are, unfortunately, living in our State, men who would be capable of just such a crime; for we know only too well that there are those who are capable of every crime recognized by Divine or by human law. But that they should be so numerous as those who assert that these fires were started for an unlawful purpose would have us believe, I do not think possible.

Suppose, however, that it is true that these conflagrations were so started, what is the manifest duty of the Commonwealth under the circumstances? Is it to repeal the only law which is now on our statute books which can afford to the owner of unseated lands the protection for which he pays taxes, or is it to seek out those incendiaries as it would seek out any other enemy to the public good, and punish them as their crimes deserved. Shall you make the innocent suffer because you are too timid, or too careless to protect the good? This is not a question which can be postponed. It calls for immediate answer. Furthermore, even if it were true, the constables, who are ex-officio fire wardens, are under no obligation to employ suspected persons in the work of suppressing these fires. Surely there must be a choice possible in these cases. We cannot suppose an entire community, or even a majority of it, would be guilty of such crime. If the constables fail to employ lawless or worthless characters the alleged inducement vanishes at once.

It must also be added here, that fighting fire day and night, as is required, is the severest kind of work. Men who might be guilty of creating fires to be paid for suppressing them, know full well that there are easier methods of earning twelve cents an hour.

There is another argument which has special force, but it requires cautious statement on the one hand and a careful consideration on the other hand. Briefly stated it is this: Because fighting fire by a *posse* summoned from the neighborhood is burdensome, so much the more promptly and earnestly will the community seek out the incendiaries. Vice, as a rule, is not suppressed until in one way or another



it becomes burdensome to law-abiding people. The more of an annoyance it is, the sooner we take effective measures to stop it.

In this connection, however, there is another recent act of the Legislature which merits special notice. I refer to the law of June 2, 1870, entitled "An act to protect timber lands from fire," which act was amended to compel county commissioners to appoint detectives to ferret out those who created forest fires. The amended act was approved July 15, 1897.

Having the prior act of March 30, by which constables were made ex-officio fire wardens, it has appeared to some that this second act was unnecessary. A comparison of the two laws will show that this conclusion is not well founded. The act of March 30, is to suppress the fires. The act of July 15 is to punish those who created them. The first is to meet promptly an actually existing danger. The second is to provide against a recurrence of it. Of the two laws, the later one is actually the more important, provided that proper men are chosen to do the work. It should be distinctly understood, however, that this law was not intended to provide an easy berth for any one. No man should be appointed to do detective work except in the belief that he will effectually perform the duties of the place. Nor, once appointed, should he be retained there if he were found inefficient. There is reason to fear that this test has not been always applied or observed.

Fear of the law is, unfortunately, the most potent agency which we have for the control of crime. If, after suppressing a forest fire, we were to make no effort to seek out and punish the man or men who started it, we would leave the owners of unseated land in the condition of a city whose police force was simply charged with the duty of driving away a would-be murderer from his victim, and then authorized to allow the criminal to run at large unpunished. Unless the second law is enforced vigorously, we may fully expect that each recurring season of Spring and Autumn will witness a return of the burnings, so long as ignorant, careless or criminal men are abroad when the fallen leaves are in a combustible condition.

These two laws have been passed after years of work, by the friends of the forestry movement, on principles that are in accord with the statutes of other States where they have been found efficient. I desire here to call attention, for the second time, to the language of the Commissioners of Fisheries, Game and Forests (1896), for New York state, page 67: "Ten years of experience have demonstrated that the present law relating to the protection of our woodlands from fire is a practical one. We have reason to believe that the widespread and disastrous fires which threatened the existence of our forests at one time will not recur. We expect small burnings on private lands will continue to occur, and so there remains the difficult task of regulating

the use of fire by land owners on their own property. In this work we are assisted by public sentiment in the forest towns, due to the law which provides that each town must pay half of the expense of fighting and extinguishing woodland fires. There has, accordingly, arisen in each town a sort of censorship on the part of the citizens and taxpayers, which acts as a detriment in the careless use of fire by thoughtless and ignorant members of the community." So much for New York State. We may fairly expect similar results here from the operation of laws which are essentially similar in character.

The question of forest restoration is clearly a large one, involving, so far as we are concerned, issues which have never yet been dealt with fully by any government on this side of the Atlantic ocean. It is fair to say, however, that every European nation has, to a greater or less degree, satisfactorily proven that State and individual forestry is capable of being placed upon a basis which would yield full financial returns. It is well to add here, also, that every Northern State in our Union, either has, or is now, considering the relations of forestry to their continued prosperity. Maine, New York, Massachusetts, Wisconsin, Michigan, Minnesota and New Jersey, as well as Pennsylvania, have already made positive advances toward outlining a forest policy. It would probably be fair to say that in this list, Pennsylvania stands second, New York alone being in advance of her.

It is, therefore, pertinent that we inquire what forestry can do for us. For the present we will consider it only from the aspect of the State; that is, where the land is owned by the Commonwealth and managed as are the State lands of Germany. The reason for at present excluding lands under private ownership, is not that their forest relations are of small importance, but because the time required to mature a crop of timber is longer than the individual citizen cares to wait for a return of his money. The position, therefore, so far as he is concerned, is not an enticing one. With the State, however, it is widely different. A century is merely a unit in the reckoning of its life. A large portion of its area has been deprived of all present available sources of wealth. What remains in or on the soil has so little value that the owners have refused to pay the taxes on it and abandoned it to the counties. These impoverished areas under present conditions have become a source of danger to the State. Under proper care, and while the State is otherwise protecting itself, they might grow into sources of revenue.

This, then, is the problem before us. What may the State fairly and wisely do with such land? Evidently it can do nothing with it without first assuming control of it. The State must therefore own the land. Owning it, it must care for it. This means that it must be guarded against trespass and started into producing something which the State needs. For much of this land the possibilities are very

meagre, and yet it is capable of producing a valuable growth of timber. It is merely a question of time and economy, whether we allow this to mature into a full size for lumber, or whether it is cut at a smaller size to meet some profitable demand.

There is no doubt that one of our great industries, lumbering, is verging towards extinction in this State. Nothing that we can do now will maintain for the present, or restore in less than a century the former existing proportions of this great business. Another, that is, tanning, is in a condition hardly less critical so far as its continuance is concerned, though we might hope to do something for it. A third industry just growing into its full importance, that of pulp making, can find in the forests of the State which are still under private ownership, enough of timber for the next quarter of a century. In that time there should be a fresh crop growing on these poorer lands and this crop should be large enough to maintain our pulp mills for an indefinite period, providing, that as any given tract is cut off it be immediately restored to trees. In doing this we should be simply repeating what the charcoal furnaces have already done, and following what is the custom under scientific forestry in Germany.

The question of what kind of timber we should produce for this purpose is one demanding investigation. In this we have a guide, in part, from the experiences of the charcoal furnaces which formerly flourished in the State, and we must fairly assume, that timber more or less suitable for pulp can be found which will produce, from well established stumps and roots, a crop of thirty cords in forty years. We may also expect that increased use of pulp and present methods of manufacturing it, will make other woods than those now used valuable.

It is fair to assume that there are now four thousand square miles in this State which are producing nothing, but which might with great advantage to the Commonwealth be growing pulp wood. That is 2,560,000 acres. This land, if managed on scientific principles, should be yielding to this State in, say forty years, about \$2,880,000. Surely this is better than nothing. But this is not all. This timber covered land would be contributing towards moderating the extreme climatic conditions in which we live. It would do its part towards placing moisture in the air by maintaining larger areas of evaporation, and this moisture would not only become, partly, directly available for the life of the plant, but it would aid in preventing the drier air from robbing the ground of its moisture. It would, furthermore, tend to make the summer air cooler and the autumn frosts less frequent. Pulp, however, is but one of the several uses to which the lands could be put. It needs no prophetic eye to see that if we would maintain our tanning interests, we must provide a supply of tannin-producing bark. Up to this time, two or three species of oak and our hemlock



have been about the only sources of our supply. We have utilized only grown or nearly grown trees. In other countries, which are less productive than ours, oaks of smaller value and growth are used for the tannin. Even acorns in some southern portions of Europe, are regularly employed. It may be years before we are ready to come to any such supply of tanning material as this. The chestnut, however, not only produces fruit of a greater or less value according to quality, but the young wood is rich in this. It has already been drawn upon as a source of supply. We may fairly assume that its importance will increase as our oaks and hemlocks become more scarce. Every acre of our barren grounds should be producing a crop of chestnut, if it is not otherwise better used.

This starts another question: That of better employment. Any new industry is an advantage to our citizens. The greater use of machinery is diminishing the number of men required to work. Meanwhile, the number of hungry mouths to fill is increasing. The white pine lumbering industry in its best days gave employment to from fifteen to twenty thousand men. This has dissappeared. Men have gone to other work. Nothing has yet come to fill the gap left by the decrease of the white pine industry.

The forestry work of the State promises to develop into an industry of, at least, as much commercial importance to the State as the white pine formerly was. In other words, it will bring back a lucrative business and provide employment for men who now are too often charges upon the bounty of the Commonwealth.

We are now experiencing a business revival. For men with certain qualifications there is abundant work; but for others less skilled, though equally deserving, no opening yet appears. There are tramps from choice, who decline to hunt a day's work for fear they will find it; but there are others who, full of honest purpose, have walked and are walking almost the entire length of the State in search of employment and finding none. Strength of the State lies in so nourishing its industries that every citizen who desires work can have it. Live they must, if not by their own labor, then by that of others. Is there nothing in all these vacant thousands of square miles for them to do which will be of mutual advantage to them and to the Commonwealth?

Frequent reference has been made by the writer to the possible use of electricity as a means of lighting houses, and to do whatever work about a farm that a stationary engine could do. The power for generating the electricity to be furnished by the stream on the farm meadow. We have seen this idea in the public mind during the last six years past, through first, the stage of incredulous toleration, then of acceptance as a scientific possibility, and now are about to witness its practical accomplishment on an economical basis. One large elec-

trical manufacturing establishment is about ready to place its cheap electrical plant for this purpose on the market.

This means that water is to become an important factor in the future prosperity of the State. And we, therefore, cannot too distinctly remember that waste of forests means waste of water; waste of water means waste of power; waste of power means waste of wealth. It is encouraging to remember that there are, at least, two towns in this State which have the wisdom to guard the forests adjacent to their source of water supply. The one with a view to saving the water; the other with a view of beautifying the approach to the town.

What has been said above refers wholly to what may be called State Forestry. There is another aspect to the problem. In earlier pages, I have alluded to chestnut culture for the fruit, and considered it, as I still do, as an important industry from which the land owner could reap a paying crop. The personal experience of the past three years has been helpful to me in this. It is not a matter of indifference how we go about chestnut culture. Whether we are to consider the Paragon or the Ridgley chestnuts as originating wholly in this country or not; it is quite certain that they are hardier than some other varieties. The past winter I lost, by the unusually cold weather, my Japanese chestnuts. It is the more a matter of regret that varieties so valuable as these do not seem able to stand our severest tests, because they begin early to bear large quantities of the choicest fruit. My Paragon and Ridgley chestnuts, on the other hand, stood the winter without the slightest damage. Probably the Numbo would have done as well.

It is not likely that we will care to cultivate trees for chestnut lumber just as we would cultivate chestnut trees for the fruit they bear. For the lumber, we would naturally desire tall, straight stems. For the fruit, we would prefer low, branching trees. Fruit culture and chestnut timber production for the purpose of producing tannin would not, I presume, be necessarily antagonistic. That depends upon whether the wood of the best fruit producing varieties contains as large a portion of this as our native chestnut does. Small chestnut timber can be used for the purpose of making the tanning extract. Such a growth could readily be obtained by grafting the choice varieties of fruit bearing chestnut on the sprouts which spring from the stumps of our native tree. After a bearing period of, say twenty years, these could be turned over to the tanner and a crop of new fruit bearing grafted sprouts obtained in their place.

It is very certain that the chestnut will enter very largely into the diet lists of the future. Thirty years ago, the use of oatmeal was by no means common in this country. To-day it is among the commonest articles of food, and its use is confined to no one class. The case



promises to become entirely parallel in regard to the chestnut. Already the demand for chestnut meal has become great enough to warrant some of the largest grocerymen in New York and elsewhere to keep it on hand in large packages. It has commenced to figure in some of the nicest preparations placed upon the tables of our leading hotels. This means the same increasing use for chestnut meal in the future that we have already witnessed in regard to the oatmeal, hot house grapes and mushrooms. We shall have to help make the market for the chestnut, but it will surely pay us to do it. To sum up this question, I feel safe in saying, that in three years we can have trees producing the best quality of chestnut for the market, allow them to bear seventeen years, then, in all probability, sell the wood for a remunerative price, and graft fresh bearing stocks. This, then, is not a question of waiting a lifetime before we begin to reap our reward. The chief foe to the chestnut is the worm. This trouble, as I know from experience, may be greatly diminished by treating our chestnut bearing trees with proper care. Gather the chestnuts as early as possible and placing the fruit where the worms can be collected and destroyed, and feeding all defective chestnuts to the pigs, or, in the absence of these animals, to burn the defective chestnuts, will greatly diminish this trouble.

We are not yet in a position to speak fully concerning the possibilities for the individual of pulp wood growing. That is a question which will depend upon several factors. First of all, upon whether any of the quick growing woods can be made to yield a remunerative crop on these waste acres of the forest and which now produce nothing else of value. It is almost certain that this can be done. Investigations are about to be undertaken which will settle this, I hope, conclusively, in the near future. There is no lack of quick growing trees which are adapted to soil of almost any character; the question being, will these trees make wood pulp? This is what we hope to be able to answer speedily.

Hickory has a varying value from the hoop-pole size, on. I am informed by one of the largest users of this wood in the State, or indeed in the United States, that in twenty-five years, timber of suitable size and quality may be produced for wheel making. Of course it would be simply adding value for the next fifty years. Florida is now shipping her hickory to our spoke works, not because it is of a better quality than ours, but simply because we have so little of our own.

There is no mystery in producing hickory trees from the seed. I prefer, notwithstanding the squirrels and mice, to plant the nuts in the autumn, as nature does. Plant enough to allow for failures. That is, put them in rows three feet apart and at intervals of six inches. They need but a slight covering, not over an inch of leaves

and earth, or earth alone. The frost will open the nut and the first season you will probably have seedlings from four to twelve inches high. Then, for a couple of years, growth is exceedingly slow. After this it is quite rapid. It is well to bear in mind that hickories are like the walnuts, in this, that they are hard to transplant, because of their large tap roots. By transplanting young hickories at two years old you may cut the tap roots and so encourage a growth of lateral roots, which renders subsequent transplanting easier, but the easiest plan is to plant the nuts where the tree is to remain. Fuller says that hickories grown in sandy soil develop more lateral roots than those planted in heavy clay soil.

It is worth while in this connection to remind you that you may search the world over and that, outside of North America, you will find no hickory growing naturally. It is our own peculiar product. There is, so far as I am aware, no wood which exactly takes its place. Neither its strength alone nor its elasticity alone; but the two together combine to make it hard to find a substitute for. It has made American wheels famous over the entire world.

There is not a farm in the State on which hickory does not at times become useful. And I will venture the assertion that you can always find a market for a hickory log of good size and quality. Pig nut hickory, as well as shell bark hickory, is in constant demand. The scientist says the latter is the better wood. The wheel maker will tell you that the former is as good for his purposes. Just utilize some out of the way quarter of an acre of your farm as a hickory plantation. See if you are not pleased with the result in ten years. Give it a soil which is damp rather than dry.

I have not alluded to the nuts of the shell bark. What the future may do in the way of furnishing a market for them I cannot say. Probably they might, if largely produced, make a regular demand for themselves. The pecan nut of the South has already done so and I do not think it is in any respect superior to our shell bark.

It may be well to anticipate the question—Why not plant the pecans in Pennsylvania? I do not wish my answer to be conclusive, but I have no reason to think we could make a commercial success of it. There are some large trees of this species growing in this State, where they have been planted, but I have yet to learn that they could be depended upon for fruit.

At the conclusion of the lecture, the doctor was most heartily applauded by the audience.

Mr. Critchfield. Doctor, I noticed a number of cedar poles recently, where they had piled them up for a telegraph or telephone line. From what part of the country are they brought?

Dr. Rothrock. Some from New Jersey.

H. C. Demming. Some from Nova Scotia.

A Member. Do you believe that the storms we have in Pennsylvania are the result of the destruction of our forests?

Dr. Rothrock. I do not believe that we can assert that to be so in all cases. In doing work along the line of the Philadelphia and Erie Railroad some thirty years ago, we had to do a great deal on the course of a terrible wind storm, where many trees had been levelled in what had been an unbroken forest.

Vice President Heiges. I have now the pleasure of introducing to you Dr. M. P. Ravenel, Bacteriologist of the State Live Stock Sanitary Board, Philadelphia, who will address you on the subject, "Bacteriology for the Farmer." (Applause.)

Dr. M. P. Ravenel's lecture was illustrated by use of lantern and a large screen.

Dr. Ravenel's paper will be published in the Annual Report of the Department.

At the conclusion of Dr. Ravenel's lecture, owing to the lateness of the hour, it was unanimously agreed that the following papers, not read, be published in the printed report of the proceedings: "The Soil, and Its Cultivation," by Colonel John A. Woodward, member from Centre, Howard, Pa., and "The Possibilities of Pennsylvania as a Fruit Growing State," by Prof. S. B. Heiges, Ex-Pomologist of the National Department of Agriculture, York, Pa.

On motion, adjourned.

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#### FOURTH SESSION.

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Thursday Morning, June 1, 1899.

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The Board reassembled in the court room at 8.30 o'clock, A. M., Vice President Heiges presiding.

Secretary Hamilton stated that according to the programme the State Board of Agriculture were to have the first day; the second day was to be given to the Local Farmers' Institute Managers, and the third day the Farmers' Institute Lecturers were to have their conference. In order to prevent any delay or mistake, the chairmen had been appointed, one for to-day and the other for to-morrow. It was necessary for the State Board to meet again this morning, in order that the committee on credentials could present a supplemental re-

port, and the roll of members be again called to verify the attendance.

Thereupon the roll of members of the State Board of Agriculture was again read, and additional arrivals noted, as follows:

APPOINTED BY THE GOVERNOR.

Hon. S. R. Downing, Goshenville, Chester County.

ELECTED BY COUNTY AGRICULTURAL SOCIETIES.

|                   |                         |                  |
|-------------------|-------------------------|------------------|
| Adams, .....      | A. I. Weidner, .....    | Arendtsville.    |
| Allegheny, .....  | J. S. Burns, .....      | Clinton.         |
| Berks, .....      | H. G. McGowan, .....    | Geiger's Mills.  |
| Cameron, .....    | J. K. Hockley, .....    | Emporium.        |
| Centre, .....     | J. A. Woodward, .....   | Howard.          |
| Delaware, .....   | G. E. Heyburn, .....    | Chadd's Ford.    |
| Fulton, .....     | W. C. Patterson, .....  | Webster's Mills. |
| Juniata, .....    | M. Rodgers, .....       | Mexico.          |
| Lawrence, .....   | J. B. Johnston, .....   | New Wilmington.  |
| Montgomery, ..... | J. Sexton, .....        | North Wales.     |
| Montour, .....    | J. K. Murray, .....     | Pottsgrove.      |
| Sullivan, .....   | J. W. Rodgers, .....    | Forksville.      |
| Union, .....      | J. Newton Glover, ..... | Vicksburg.       |

The Committee on Credentials made this report through the chairman, Mr. Thomas, recommending that Mr. R. F. Schwarz be seated as a member of the Board from Monroe county, he having been elected a member by the Monroe County Agricultural Society.

On motion of Mr. Thomas, duly seconded, Mr. Schwarz was admitted to membership.

On motion of Mr. Hutchison, seconded by Mr. Clark, the Board adjourned.

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FIFTH SESSION.

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Thursday Afternoon, June 1, 1899.

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On motion of Secretary Hamilton, seconded by Col. Woodward, the State Board of Agriculture reconvened at 1.30 o'clock, P. M., Vice President Jason Sexton, of Montgomery county, in the chair.



HON. THOMAS J. EDGE.

Colonel Woodward offered the following, which was seconded by a number of the Board:

*Whereas,* The changes usual in administrative affairs have resulted in taking from among us the first and only Secretary the Board has ever had; be it

*Resolved,* That in this, the first meeting of the State Board of Agriculture without the presence of the Hon. Thos. J. Edge as its Secretary and guiding and leading spirit, we wish to place upon record an expression of our appreciation of his uniform courtesy and kindness in his intercourse with the members, and of his constant, arduous, unselfish and successful labors in the interests of the farmers of Pennsylvania.

*Resolved,* That Secretary Edge, in his retirement from the duties of the high office he has so long and so faithfully performed, carries with him into his more private, but we trust, not unuseful life, our warmest wishes for his improved health, increased comfort, and unalloyed happiness.

Colonel Woodward. Mr. President: In moving the adoption of these resolutions, I desire to say, what I believe, that there is not a single member of the Board who will not make a hearty and courteous response as seconder of the resolutions. We have always enjoyed Mr. Edge's presence, and we miss him much to-day. This is the first time he has been absent since the organization of the Board, as stated in one of the resolutions; and until this meeting, he has been the only Secretary that the Board has ever had. I thought we should not, at the first meeting of the Board without him, allow the occasion to pass without placing upon record, in some tangible and permanent form, our high regard for him, and our full appreciation of what he has done for the farming interests of Pennsylvania. I move you, sir, that the resolutions be adopted.

Mr. Downing. Mr. Edge is a native of our county of Chester, and I am sure that the farmers of that county—not only the farmers, but the farmers' wives—will appreciate these resolutions, if passed by you. He is a man of whom we are proud; of whom we can say that he bore a good record, and still bears that record, and possesses a high character; a man, honest and true. We feel safe also in saying what we have said, because we have known him for years, and his course has been to face always towards the right; always having at heart the good of the agricultural people. Therefore, I feel it an honor to have the privilege of seconding, or supporting, these resolutions.

The preamble and resolutions were unanimously adopted by the Board by a rising vote.



objection is not often a valid one. "What cannot be cured must be endured." The most remote residents of the township will be to a great disadvantage; yet most of the people have horses and vehicles which should be used to convey children to and from school. There are few townships where the most remote residents would have to travel three miles or more to the centre of the township or to the centre of population of the district. Small townships might advantageously unite in the support of a high school. More than one term, when a boy, I traveled three miles each way to and from school, every school day, in order to avail myself of the services of a supposed superior teacher, or of the advantage of pursuing studies which were not taught in the district school in which I lived. I was not injured, but rather benefited by the travel, and can recommend it to others. In most instances, where several children have an unusually great distance to travel to school, arrangements could easily be made to convey them to and from school. People can neighbor and distribute labor among them to their mutual benefit in other matters of business; then why not apply the same practices in public school matters. We rarely provide for emergencies before they come, but when they do come we find a way to meet them when we have a will to do so. When township high schools are adopted, all important matters in their management will speedily adjust themselves to work the least injustice to all concerned.

3. A disposition to stick to the antiquated idea of teaching only the rudiments in our common schools, as opposing the introduction of higher mathematics, sciences, literature, etc.

This is a stand-still idea, if not a retrograde step, and can be met only by education itself, and by showing its manifest advantages and its practical necessity. There are persons in every community who are incompetent to care for themselves, who must be cared for, and this is especially true on educational lines. The man who accepts the position of director of our public schools, takes upon himself a highly important and deeply responsible duty to the general public. He should be well informed on educational matters, broad minded, large hearted, conscientious in his work, and in close touch with the progressive thought which directs and controls the policy of our public schools. The man who takes a stand for higher and more general education is on the right track and can afford to meet all the opposition he will encounter, well knowing that a wise and intelligent citizenship will sustain him, and the future will vindicate the wisdom and consequent value of his position. The general intelligence of the people is the strongest safeguard of the nation, and the sure guarantee of its perpetuity.

Need I say a word as to the superiority of graded over ungraded schools. Speaking from a teacher's standpoint, I can say from prac-

tical experience, that in schools well graded, a teacher can instruct with equal success from 50 to 100 per cent. more pupils than in ungraded schools. Therein consists the economy of city schools, where teachers receive better salaries, and yet the cost per pupil per month is less than in country districts.

The township high school will draw from all the schools in the township the most advanced pupils, and thus enable the teachers in the other schools to do better work. The few whose advanced studies take an undue portion of the teacher's time, will also be greatly benefited, because of the greater amount of time the teacher in the high school can devote to them. In very many districts in the State more schools are needed and buildings are already erected, which, if furnished, would be suitable for a high school. High schools are already being conducted successfully in many rural districts. The needed legislation in the interest of high schools will soon be forthcoming, and it is our duty to prepare for it. Study the question; create a sentiment in its favor and in the near future we may be enjoying its advantages.

As thought precedes action, so the study of this subject from all standpoints may enable us to bridge over the difficulties which seem to be in the way, and when careful consideration leads to decisive action, a great forward step will have been taken in the interest of popular education. (Loud applause.)

Vice President Barber. The topic is open for discussion. The Chair will limit each speaker to five minutes.

Mr. Hutchison. Professor Heiges is called for. He has had much experience along educational lines, and we would all be much pleased to hear him. Having been superintendent of the public schools of York county, and for a number of terms the principal of one of the normal schools, I am sure he will have something of interest to say on this subject.

Professor Heiges. During the last winter I discussed the subject at the institutes, and almost every member has heard me on this matter. It would be a waste of time to speak further now.

Secretary Hamilton. We are going to talk to a whole company of people outside of our membership. I think it will be well to add a few additional words to every person's paper, as a sort of comment.

Professor Heiges. Mr. President: The subject under consideration is one of my regular topics; and I know I have delivered it in all parts of the State. Then, my views are so in accord with what has been said, it would be superfluous for me to say anything. Mr. Critchfield is well versed on subjects of this kind.

Mr. Critchfield. I do not believe in being slandered in the presence of such a large audience. Then, I am not in condition to talk at all. I hope the gentleman will continue until his remarks have

reached some interesting proportions at least, before the rest of us undertake to talk on the subject.

#### CHESTER COUNTY CENTRAL HIGH SCHOOL.

Mr. Philips, of Chester County. I was going to emphasize one feature of Mr. Herr's paper, and that is the question of transportation. In my county (Chester) the experiment of closing the schools or many schools of a certain township, has been tried, and the experiment of providing public transportation from all parts of that township to a central high school has been tried, too, with success. Now, the experience of the directors of the different townships which lie in the eastern part of our county—a purely agricultural district, with a few of those beautiful suburban towns in it along the Pennsylvania Railroad—is, that it has been a very great advantage and a very great success; and it is an object lesson to similar districts all through the State. There the directors made a very close and careful calculation as to the transportation of these pupils, as well as the amount saved by the closing of certain other schools, and providing transportation to this central high school. You will understand that they were going to have a graded school, not one school in the centre of the township higher than another; but that they were going to concentrate all other schools in one central locality, so that one heating plant would heat the whole, and one janitor have charge of the whole system of rooms. I will just close by simply presenting this sample in that one township of Chester county. There was great objection at first; but, after a trial of some four years, I believe the opposition has almost wholly ceased. In that township of formerly seven schools, they have adopted the policy of one central high school. It has worked admirably in many districts, is done without increased taxation, and is a great advance.

Mr. Thomas. I would like to ask whether the transportation is at the cost of the district?

Mr. Philips. Certainly.

Mr. Barber, of Union County. The public school question is one that is coming home very close to me; because I have children just coming on, and we have no high grade schools to send them to. In regard to the township high school, I should not object to that if the money was provided by the State. I think that all our schools ought to be supported by the State. We talk a great deal about the State's appropriation to schools; but it is not in proportion to the amount wasted, or carelessly used by incompetent township officials. In one township they are almost ready to rise against it. I think it would be greatly to the advantage of all concerned if the State would provide township high schools.

## FARMERS' MISTAKES.

Vice President Barber. The next paper is on "Our Mistakes," by D. L. Notestine, member from Mifflin county, Lewistown, Pa.

Mr. Notestine. I came away with the wrong paper, and ask to be excused this time. If they wish the paper for publication, I will mail it to them.

Vice President Barber. The next topic is "Stock Raising for Profit," by P. K. Patterson, of Greenwood, Columbia county, Pa.

Mr. Patterson read his paper as follows:

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 STOCK RAISING FOR PROFIT.

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By P. K. PATTERSON, *Greenwood, Pa.*

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The subject assigned me, is one in which many farmers are deeply interested at the present time, and one to which they should give thought and attention. The present is a time when close competition is manifest in nearly every branch of business. The time has come when the farmer and stock raiser must do his own thinking. He must bring intelligent brain work into joint partnership with his hand work, which is daily required on the farm. He must decide what stock he can raise with most profit. He should be an expert judge of farm animals. He must know how to buy and how to sell to advantage. He must dispense with the middle man or broker, and be able to do that work for himself in order to make stock raising a profitable business.

This essay is written for the benefit of the Pennsylvania stock raisers; our brother breeders and farmers of the West having much better facilities for raising stock, also good markets six days in the week. Nearly every farmer is expected to raise some stock, whether it be at a profit or loss, but I am sorry to say, frequently at a loss. Twelve years ago I began farming in Greenwood township, Columbia county on a rented farm. My dollars were very few. Our land, being hardly of medium quality for this county, needs nursing and feeding, so I cannot count on selling my grain from the farm.

Under the circumstances mentioned, five years ago, I decided that a farmer must raise thoroughbred farm animals of the kind and quality that the buyer would want and be looking after, to make stock



raising profitable. The farm on which I now live is not adapted to keeping many cows. I keep six thoroughbred Jerseys, however, all registered. My cows are only heifers, ranging from two to four years old. I cannot tell you that they will and do give me three or four pounds of butter per day, but have recently made a four months' test and find my heifers giving me a daily average of one pound one and one-half ounces per heifer. My butter is printed in pound prints and sold at an advanced price, and it is always in good demand. Registering does not make the cow, neither her milk or the butter, better than without registering, but it is the means of ascertaining her breeding, and a guide for the buyer; it is also the means of increasing her value and that of her offspring, thereby making her much more profitable to her owner than the cow not registered. The Jersey cow does not give as great a quantity of milk as some other breeds, but for quality and for butter making, she stands second to none, when properly fed and cared for. The demand for her butter is greater than the supply. The same may be said of her calves. A good calf sells readily from my herd for fifteen to twenty cents per pound, in place of four and one-half to five cents for the scrub calf.

In the poultry house, I have thoroughbred stock. I have tried a great many different breeds, and have decided that the Barred Plymouth Rock is the more profitable for a farmer, and, if properly cared for, they are good layers and good weighers. There is a good demand for the bird, as well as for their eggs, at a good price. Since the first of March I have sold my eggs (all that were suitable for hatching) from three to eight cents each. The bird is large, the average weight being five to ten pounds. I have raised hens that weighed twelve pounds and two ounces each. For a farmer's bird, take the Plymouth Rock every day.

I make swine breeding more of a specialty than any other stock; using in my herd twenty-five to thirty sows and six service males, all registered stock. I have selected them from, what I consider, the more profitable breeds, namely, Poland China, Chester White and the O. I. C.'s. There are a great many people who question whether hog raising is a profitable business. I claim that when properly carried on, it is the most profitable business a man can add to his farm work. I believe in raising hogs that will sell, those that will demand the highest price. To get this you must have the best. Too many breeders in starting a herd, buy the cheap individuals, which is a grand mistake. Always buy the best you can get. If a breeder gives you his prices on his stock and tells you that he has one or two exceptionally fine ones but the price, probably, is higher, take the best every time, and presently you shall have the best yourself. I sell my stock all over the United States, having sold in fifteen different States. My stock is in demand at a good price. I receive from ten to twenty-five



cents per pound, live weight, for my pigs, in place of four to five cents a pound for razor-backs, dressed.

Another illustration which should convince every wide-awake stock raiser that thoroughbred stock is the thing to feed, is this: Less than two weeks ago, two of my neighbors sold six pigs weighing, possibly, 100 to 125 pounds each, for \$21.00. These men are equally as good feeders as myself, and possibly better. The following day I sold five pigs, four of them weighing from 85 to 110 pounds, and the other one, possibly, 150 pounds. I received \$65.00 for my five in place of \$21.00 that they received for six, a net profit of \$44.00. Men differ in opinion as to which breed of hogs is best to raise. I claim that the Poland China stands at the head of every breed, being of fine quality and well proportioned, with limbs strong enough to carry his weight. He is the strongest in bone and muscle of any hog on earth. While I sell more Chester White pigs than Poland China, still Poland Chinas predominate in the Western States. In the years past it was customary to keep hogs from one to two years old to have them weigh, when dressed, 150 to 200 pounds. With the improved breeds, by proper care and feeding, a pig of seven months should readily dress from 250 to 300 pounds.

In order to raise stock for profit a man must take off his coat and do the work himself. Hired help will not, nor cannot do it, especially in the raising of swine. He must be in love with stock raising, taking delight in it and pay strict attention to the business; and by raising the best of thoroughbred stock, and giving it the best of care and management, it can be made a very profitable business.

In conclusion, I would impress on my fellow farmers to cull the stock, at least, once a year and sell off the unprofitable for whatever it will bring. This is something too much neglected by farmers, and especially with milch cows. Test your cows fully, and know exactly what each one is worth, and any one in your possession not worth forty or fifty dollars, sell. The managers of the Pennsylvania State College soon found the difference in value between the cow producing 200 pounds and the one producing 500 pounds of butter per year. The farmer can do the same thing if he will, and at a profit to himself, besides the satisfaction of handling paying stock. (Applause.)

Mr. Piollet. I would like to ask Mr. Patterson whether he sells any of those pigs to butchers, and if so, what price he gets for them?

Mr. Patterson. I do. I generally sell them to the hucksters, at five dollars a pair, eight weeks old. Those pigs, however, are what I call "culls."

Mr. Piollet. The average farmer who produces pork—that is, engages in the raising of swine for the general market—cannot receive, or does not receive anything like twenty cents a pound for his product.

The man who is engaged in special breeding for stock may be able to get those prices. But if we all were to undertake to raise pure bred pigs just as stockers, and put them on the market, I am afraid we would not get that price.

Mr. Peck. I would like to know whether he gets the most profit in using his skimmed milk by feeding it to pigs, or to calves?—I mean his pigs and calves which are sold in the public market; not his blooded stock. I have had some experience in that line, and I would like further light.

Mr. Patterson. Mr. President: I would not slight my calves. It does not pay to raise a calf unless you raise it right. But I believe that I can do as well, or a little better, by giving this milk to my pigs. I believe, understand, that I can substitute another food for my calves that will help me out quicker, and more nicely, than I can for the pigs. I hold to the idea that it is much better and more profitable to raise this kind of stock; that we do not have to feed six or seven months, and get less for it than it cost us. Good stock is always in demand, if you take care of it. Answering Mr. Piollet, the fewer in the business, the better we are off, though good stock has always had a sale.

Mr. W. W. Giffen, of Northumberland County. Breeding pigs has been my specialty, not the breed the gentleman referred to, for I have not done much by way of experiment with that. But first, before I answer the question that was asked here, I would like to reply to the question of Brother Piollet. His inquiry, I believe, was, How can a farmer make as much out of his stock as a breeder of the fancy stock? Now, as a member of the Recording Swine Association, I wish to say this, that the so-called fancy breeder does not have an opportunity to lay up more profit than the ordinary farmer, because he has advertising expenses to meet and has to purchase more or less literature to keep him posted in his business. The ordinary farmer is not obliged to advertise to the tune of three dollars to five dollars in each publication. I sell much higher than he does and have the least profit apparently; but when all my expenses are paid, perhaps there is not much difference.

As the reader of the paper has said, the best is always the cheapest. One thing he failed to state was, how much he paid for the foundation stock. If he were to tell that, it might be that he has not done as well as some of the rest. I have stock that cost on account of the strain \$1,200 to \$1,500. The strain that I got the most profit from, is that for which I paid the most money. As soon as the farmer learns to appreciate the value of having recorded strains he will have learned something greatly to his advantage; because the best animal always brings the best price. A pig costing one dollar may be dear at that price, whilst an animal costing \$10, to be bred for strain, may produce

progeny worth \$25, \$30 or \$50. Breeding is valuable, and there are secrets in the breeding business that most farmers do not dream of.

Mr. Peck. Some two or three years ago I experimented on the comparative value of feed for cattle, calves, sheep and hogs. I had some of the common, and some of the well bred hogs; taken altogether, considerably over the average, from the farmer's standpoint. I found I could realize two dollars with my skimmed milk, by feeding it to calves, where I could one dollar out of the milk fed to hogs. The consequence was I found it more profitable to buy calves from farmers that I could purchase from; and have adopted the plan of feeding milk to calves, instead of feeding it to hogs. In this way I have found much more profit than on the other lines.

Mr. Giffen. What do you realize from that calf, at a year old, feeding that way?

Mr. Peck. Like my friend, I am a breeder of blooded stock. I do not find it necessary to quote prices. We do not usually give prices away. I have disposed of some at \$16 a piece.

Mr. Giffen. I know we do not usually give prices away; but I thought it necessary to get at the fact for the benefit of the farmers present. Hogs to-day are bringing practically more, and so with sheep, than horses or cattle, for the money invested.

Mr. Hutchison. I do not like that statement of Mr. Peck's in regard to the profit. His comparison of pork for the general market with registered calves for other purposes. One of these gentlemen, as I understand, is a breeder of Jerseys, and the other of registered pigs. Now, our farmers, as a rule, raise cattle and pigs to sell on the general market. This being so, this view of the milk question by which it is fed to fancy calves or pigs would not be fair at all when applied to the ordinary farmer feeding stock for the general market, for he cannot afford to raise high priced calves or pigs to sell at \$3.00 or \$4.00.

Mr. Piollet. He gave the common breed at \$16.

Mr. Peck. For different varieties, I should have said.

Mr. Hutchison. That would not be the market price at all.

Mr. Peck. That was the market price for men to buy and take to New York.

Mr. Hutchison. What age?

Mr. Peck. About nine months old.

Mr. Brosius. The question has seemed to have become a little mixed up, as I understand it. One party is discussing the quality, the stock being worth a great deal of money. The average farmer simply raises or produces stock for the market that can be gotten up for sale to the butcher, and he raises that on his farm which can best be used for food. Now, when you start out, there is a certain kind of calf or pig that pays well on the farm. With a dairy, the pig and calf both



pay and pay well. But the man who has blooded stock and runs a dairy as a side issue must get his money from an entirely different standpoint. He must receive more than butchers' prices or he will lose money.

#### ADVERTISING OUR BUSINESS.

Mr. Critchfield. We used to have up in the western part of the State a local preacher who was a merchant. He was in the habit of filling appointments of regular preachers; and now and then in his sermons he would say: "Now, to illustrate: Suppose you wanted to go into the store to buy the latest style dress goods—and there is no one in the county that keeps a better quality than I do."—And so we are likely to advertise our own business. Some one has said that one of the things necessary to succeed in stock raising is to like the business. That is, we must like the kind of stock that we raise. If a man likes the Guernsey or the Jersey better than any other breed, let him stick to the Guernsey and the Jersey. If he likes the Shorthorns, like my brother Piolet, then let him stick to the Shorthorns. But I would advise him to take them off; and so with the pigs. Beg your pardon—the Professor will tell you it is a conjunctive adverb sometimes.

I mean to say that you must like the breed, if you have the pigs. I prefer the I. O. C.'s to the Chesters. You must like your business; that is what makes it easy. Every man will have easy work, if he likes to do what he has in hand. I have seen men kick in the ball field, and play at base ball until they were covered with perspiration. It seemed to occupy nearly all their time, but they liked it. But put one of those fellows at wood chopping, and he would not like that. Hard work. So, if you like the business, it will be easy, and give you pleasure; and, if pleasureable, very likely you can make it profitable.

The next point is, that you must have thoroughbred stock; I believe in that. I am not going to tell what kind of stock I have, whether thoroughbred or not—not advertising my business. But you want to have the very best. It would not pay to raise a long, thin razor-back; and perhaps it would cost more than to raise a fine English Berkshire. (Laughter.)

Mr. Hutchison. Is that your business?

Mr. Critchfield. I have not said.

If you are raising sheep, get the best; and so with steers. Get of the breed, and the best of the breed that you like most, and you are more likely to succeed.

Another point is, that you want to get into the market just as quickly as you can. One gentleman sold his calves at nine months old for \$16. He fed them something more than skimmed milk. They



were pushed right along. And so with the rest of the stock; you should get the best of the breeds you like.

Professor Heiges. What breed of hogs, Mr. Critchfield, makes the best bacon? (Laughter.)

Mr. Critchfield. Well, that is hardly fair. (Renewed laughter.) But the question has been asked, and I will answer, that in my judgment, it is the English Berkshire. I have tried the Tamworth; but so far as my experience goes, I have had better results from the Chesters, the Poland Chinas, and the English Berkshires. But I do not think we ought to take quite so many breeds, unless we intend to go into that particular business.

Mr. Clark. Don't you know that the razor back brings the highest price?

Mr. Critchfield. Yes; but other breeds pay more. If it were not so, we would raise the razor back.

Mr. Kahler. I am in favor of the thoroughbred.

Mr. Critchfield. I believe in farmers adopting the thoroughbred policy, which is that if you have a breed that is registered, to keep it registered right along. In many places the stock has been reared from the thoroughbred, but no attention has been paid to the family registration, though there has been maintained just as high a grade.

Mr. Giffen. Do I understand the Senator to say that the thoroughbred is the registered animal?

Mr. Critchfield. Yes, sir. That is, in addition, through the various successions and generations the stock has been kept registered as thoroughbred, and they have been thoroughbred right through.

Mr. Giffen. Yes. You can register an animal that is not a thoroughbred; but a thoroughbred must be registered.

Mr. Critchfield. That may be so. But if you raise that stock from thoroughbred it is all thoroughbred stock. If you raise registered stock from that which is unregistered, then you have a wellbred, but not a thoroughbred.

Vice President Barber. The next topic will be "The Old and New Way of Farming," by J. F. Boyer, member from Snyder, Mt. Pleasant Mills, Pa.

Mr. Boyer read his paper as follows:

## OLD AND NEW WAY OF FARMING.

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By J. F. BOYER, *Mt. Pleasant Mills, Pa.*

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Inquiry in agricultural communities which are without railroad communication, and into which modern ideas of farming have not penetrated very far, and scientific methods have not been generally adopted, would reveal the fact that a great deal of the business in these localities is conducted in an unprofitable manner. There are exceptions, occasionally, of course, in these communities. There can be found a farmer who reads and thinks about his business, and who adopts improvements as rapidly as he can do so, after they are shown to be really better than the old ways, that they are designed to supersede. But the majority are not of this class. They are good men, kind neighbors, and warm friends, but they are not doing well in their business, because they do not know the principles upon which success in these days of close competition depends. Their thinking is along other lines (their time for reading being limited), and is principally given to other subjects, such as Mr. Brown is planting an extensive apple orchard, and Mr. Jones is putting a cement floor in his stables to save the liquid manure. "I am sure apple growing does not pay," they say; "cider is too cheap, and dried apples are too low in price." "And do you think Mr. Jones will ever get the money back from the cement floor investment?" "These fellows want to show us how to farm and we have been at it all our lives and ought to know something about it."

Now if such men were willing to be informed in regard to new methods and recent improvements, they would be greatly aided by our Farmers' Institutes and agricultural papers. But they want to farm the old way, and do not realize how pressing is the need of knowledge, and, at the same time, take so little interest in the matter and have so little faith in the principles that are explained, that they make no effort either to learn or to adopt better ways.

Prosperity does not depend entirely upon attention to any one or two details. There are a large number of factors, some of which, however, are of far more importance than others; principally among which in farm affairs are, the quickness to see and the promptness to grasp opportunities for farm improvements. To some men far better

opportunities are given than to others; but at some time in this life there is for nearly every man a way opened by which he can make some decided improvement in his condition. Unfortunately, many men are not alert, and so they let the favorable occasion pass unimproved. If they ever make an effort along the line which has been open, they do it too late to secure any marked degree of benefit. Other men, more prompt, and as a reward for their activity, gather the larger part of the good which is open to all. When, by the old way of farming, a crop of potatoes is raised, and should the average be one hundred bushels per acre, but the price only twenty cents a bushel, the farmer thinks he is losing money; but should he raise fifty bushels per acre, and receive forty cents a bushel, he thinks he is making money.

I know of one of the old-way farmers who got sore feet one forenoon, but he kept at his work all day, and in the evening his wife discovered that he had the right shoe on the left foot and the left shoe on the right foot. It matters very little whether you are a farmer or a business man from the city, you can see that some farmers are making money, while others, with the same advantages, are losing money. Why should this be so in a State like ours, with only about one-half of its acreage in cultivation and the other half rich in iron, hard and soft coal, coal oil, etc., with plenty of water power in various sections, and, above all, a good market.

We live in the State of Pennsylvania and we call this our home, and surely this is our market. Let us see who supplies our markets. Go into any of our large manufacturing towns or cities, and you will find Irish potatoes, apples, sweet potatoes, water melons, cantaloupes, beef, pork, wool, farm implements, musical instruments, canned peaches, corn and tomatoes, beans, celery, and other articles too numerous to mention. Ask the dealer where these articles are from, and he will tell you that the apples, potatoes and beans come from New York State, the melons, cantaloupes and sweet potatoes from New Jersey, the canned goods from Maryland, the celery from Michigan, and the wool from Ohio. The implement dealer will tell you that his stock comes from the West, while the musical instrument dealer will inform you that his stock comes principally from New Jersey. Why is this? Because those people made it a business and brought these products before the world in a business-like way, and thereby gained a world-wide reputation. This is why our dealers go to those States, because we do not produce or manufacture what our markets demand.

It is true, however, that all soils will not grow celery, cabbage, peaches, currants, raspberries, blackberries, cranberries, sweet potatoes, watermelons and cantaloupes; but there is enough such soil in the State of Pennsylvania to produce sufficient supplies for our own

markets, which would mean thousands of dollars for our agricultural people. Some of the old-way farmers, however, will say, I tried that and I could not sell. There is just where the trouble comes in. Many tried it and brought their products before our markets and dealers in such an unbusiness-like way, that our home people would not buy, and then these growers became discouraged and went home, and talked about the dark side of farm life, that farming does not pay, and that he had twelve pigs and they all died but eleven. Now, all that was wrong about it was, that he had the right shoe on the left foot.

Our farms in Pennsylvania are being continually reduced in size, whereas, the old farm years ago, contained from one to two hundred acres, and had one family to support, and about four head of horses. To-day, many of these farms are cut in two, three, four, and some as high as five farms. Each one of these farms must have a team, and about the same sum of money is required to purchase implements as was necessary on the big farm. To-day, in place of one family and four horses, each of these old farms has to support four and five families and from eight to ten head of horses. Is there any wonder that the eastern farmer cannot compete with the western farmer who cultivates as many acres as he can, while the eastern farmer has his team standing idle in the stable much of the time.

Another great help to farming years ago was the timber. If a farmer was in need of money and had no grain to sell, he would go to the timber tract, peel bark, make railroad ties, etc., for which he got good prices; this he cannot do to-day. Another great help to old-way farming, was the women working in the field and doing almost as much work as the men. I do not wish it, by any means, to be understood, that women should work in the fields; but I wish to say, that had our forefathers worked the short hours and had they to pay for the work which was done by women, and put up as good buildings and live as comfortably as we do at the present time, without the aid of the timber tract, he would not have made more money at farming that we do to-day. I believe that more farms were paid for with the timber than were paid by general farm crops.

Then you might ask the question, "Did farming ever pay?" Certainly it did, and, excepting the few years during the Civil War, it pays as well now as it ever did. Many a farmer became rich after the war times; but that money was not all made on the margin between the cost of production and selling price on general farm crops, but by the advance on real estate, just as it was lost on the decline. I hope the State Board of Agriculture will be the instructor, and the work of the Farmers' Institutes will, in the near future, reach every township in the State, instead of every county.



The time will come when one of these small farms will produce as much as the large farm ever did. The new-way farmer will select suitable soil and suitable crops, and, thereby, produce enough on one acre to buy all the wheat, corn and oats, that was ever raised in one year on any acre in the State, at the highest price ever paid for those grains. In agriculture, lies the wealth of our nation. We are the people who keep the grass from growing in the streets of our large cities, and the rust from accumulating on the railroad track. I am thankful that I am a farmer, and am glad to be known as one. There is no more honorable or happy occupation than that of the farmer. To own a farm and till it is, indeed, something a man can be proud of. The farmer is his own employer, and he does not have to go or come at the sound of the whistle. He may set out trees and shrubs about his home, making it as pleasant and attractive as his taste dictates. No home is more delightful than the farmer's. He who looks down on the farmer simply because he gets his bread by tilling the soil, shows a lack of proper intelligence. (Loud applause.)

Vice President Barber. Is there any discussion on this subject? (After an interval), If not, we will proceed to the next item on the programme, "The Creamery in Columbia County," by Charles W. Eckman, Millville, Columbia county, Pa. Is he present?

A Member. No, sir.

Vice President Barber. Then we will proceed to the next, "Does It Pay the Farmer to Make Butter?" by Philip Harris, Lime Ridge, Columbia county, Pa.

(Before Mr. Harris had been introduced to the audience.)

#### CO-OPERATIVE CREAMERIES.

Mr. Thomas, of Cambria County. Would it be in order for me to make inquiry at this time as to the prospect of profit in establishing a co-operative creamery? Now, I make this inquiry because in my county at the present time the creamery companies are at work to increase these establishments, and they are trying to induce the farmers to enlist in co-operative creameries; and it is the intention of our farmers to do this. We have had no experience in co-operation; but if indications do not change, we will have two co-operative creameries established in Cambria county within the next month. I have no doubt that many present have had practical experience in this matter; and some present know the conditions which surround the dairy business in Cambria county. Brother Critchfield knows all about it, and so does Mr. Heiges, and also Mr. Hiester. I know it will be a benefit to the people of Cambria county if gentlemen present will give this information. If given, I promise to communicate it to my brother farmers. They are anxious to have it.

Vice President Barber. Mr. Harris is present and is ready to submit his paper.

Mr. Philip Harris, of Lime Ridge, Columbia county, then read a paper, entitled "Butter for Profit," as follows:

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## DOES IT PAY THE FARMER TO MAKE BUTTER?

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By PHILIP HARRIS, *Lime Ridge, Pa.*

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Nearly all farmers make butter, but the majority of them do not know whether they are making it at a profit or loss; simply for the reason that they do not keep an account of what it costs to make the butter or even what the sales amount to. There are four essentials necessary for profitable butter making, viz:

First. The right kind of cows.

Second. The right kind of feed and care of the cows.

Third. The making of the right kind of butter.

Fourth. The marketing of the butter so as to get the highest price to be obtained.

We will consider first the herd of cattle, which is the foundation to begin with. How to obtain a herd of the right kind of cows, is the great difficulty with a person starting in the business. You cannot go out among the farmers and buy first class cows unless you pay a very high price for them, for the farmer who has a cow or two to sell will not sell the best cow he has, but if he has a cow that has some fault or does not give much milk and not very good what she does give, that is the cow that is for sale. It is possible to obtain a herd of first class cows with a good record, but it will require a great deal of money to do so, as you would be obliged to pay such prices for the cows as the party having them to sell, will ask you.

Now, there are not many farmers who have the money to start in the business, beginning at the top, but the majority of them will have to begin at the bottom and work up to the top. The best and cheapest way is to go slow. Buy a few heifer calves, if the right kind of stock. It will only take two years for a heifer to come in fresh if she is properly raised, and you may get some of the very best cows to be obtained and will not require a great amount of money, either. You may have to pay ten, fifteen or twenty-five dollars for a heifer calf

of the best breed of butter cows, but the raising of the calves will not be very much, and the difference in the price of a first class cow and a common scrub cow will, perhaps, buy two or three calves.

Having obtained a herd of good cows, in order to make much butter and good, it requires a good, warm shelter in winter, with good, fresh water, plenty of good hay or fodder, with either ensilage or some root crop, such as mangles, etc. Also, chop, middlings and wheat bran, enough of each to make a balanced ration. If a person keeps a large herd of cows, perhaps it would be better to have silage, but for a small herd, I think to grow mangles for winter rations would be less trouble and will answer very well to keep up the flow of milk.

We next come to the milking and butter making, which is a very important part of the programme. Cleanliness is the main part of making first class butter. In milking, be very careful to brush off all dirt and filth from the cow's udder before milking. Keep the cow's foot and tail out of the bucket, as they do not belong there. After the milking is done, strain the milk as soon as possible, and having obtained a good separator, run the milk through it while yet warm. The cream may then be put in a cool place to ripen, after which, churn it. Salt and work the butter and put it up in one pound prints with parchment butter paper wrapped around it. The butter should be kept in a cool place where the pure air can pass over it; should not be boxed up tight, as it might taste after the wood or vessel in which it is stored.

The last, but not least, is the marketing of the butter at the highest price to be obtained for first class butter. There is no trouble to sell your butter. You can take it to the store. They will buy it and pay you just as much for your first class butter as they do for the poorest butter made. Of course, they can't afford to pay a big price for it, as they put all together in a cupboard or box, "good, bad and indifferent," and in three or four days it will all smell and taste nearly alike; and if the merchant happens to get more on hand than his customers want, he will sell the surplus for soap grease. The best way to market your butter at a good price is to hunt good customers and deliver your butter in first class condition once a week. In getting customers, you will find all kinds of persons to deal with. Some of them will want your butter if it is first class, but they want it at the least price the stores pay. You deliver your butter to them first class in every particular. They ask the price. You say 22 cents per pound. They say it is too much; the stores are only paying 16 cents. Whenever you meet those kind of customers, just tell them to eat store butter, as you don't have that kind to sell. There are persons who want the best in the market and who are willing to pay a little more than the store price. Those are the kind of customers you want.



Now, about the advantage of having a cream separator of your own. First, you get all the cream out of your milk that there is in it. In the old way of setting milk in crocks or pans and leaving the cream to raise at its leisure, if the temperature is just right, you will get nearly all the cream from the milk; but if the weather is too hot, the milk will get sour too soon and you don't get all the cream. If the weather is too cold, you don't get all the cream. Second, the skimmed milk from the old way is always more sour when the cream is skimmed off, while with the separator, it is entirely sweet and is worth a great deal more for feeding either calves or pigs.

Now, about hauling your milk to the creamery. That is all right, if you want to make less work for the women, but it will make a difference of from five to eight cents per pound in favor of running your own private creamery as before stated, in this way. First, you will get four or five cents more per pound for your butter by delivering it to your customers than you could get from the creamery. Second, you would gain about one-sixth in the amount of butter produced, as you are only paid for the butter fat contained in the milk. To illustrate: If you send enough milk to the creamery to make six pounds of butter fat, by churning the butter yourself it would make seven pounds of butter, thus gaining one pound out of six. Then, the skimmed milk from the creamery during the warm weather in summer time gets sour by the time it is hauled back, while milk from your own separator, if set in a cool place, will keep sweet quite a while. (Applause.)

Mr. Peck. One question as to the time of year that you have your cows come in fresh? The other is, how do you ripen your cream in winter?

Mr. Harris. The most profitable time to have your cows come in fresh, is late in the fall, and then to continue a couple of months. Butter, of course, always brings a higher price during the winter; and it is more profitable, although it costs more to make butter during that season. You can always make butter cheaper in the summer. There is more of a demand for it in the winter, and you can sell it to better advantage.

As to ripening cream, in the summer time it will ripen itself, in a good cool cellar. In the winter time you have to place it near a fire all the time, night and day—not too close to the stove, but close enough to have a good warm air. It will take about the same time in the winter as it does in the summer, if kept close enough to the stove.

Mr. Peck. Do you put the morning cream with the evening cream in the same can during the winter?

Mr. Harris. Yes, sir.

Mr. Peck. Do I understand that the ripening of the cream properly is essential to the making of good butter?



Mr. Harris. Yes, sir.

Mr. Peck. Is there not a better time to mix? Can you mix twenty-four, forty-eight and seventy-two hours together, and have it mixed thoroughly to have best results?

Mr. Harris. I think if it stands twenty-four hours, it will mix thoroughly—that is, well enough for our purpose. For instance, you put this cream in to-night (Wednesday), and Friday you can churn; and in this way you can churn two or three times a week. Sometimes, if we put it in, say, this morning, to-morrow morning we churn it all together.

Mr. Peck. That is an important question to me. I deliver my butter fifty-two weeks in the year. I am making perfect butter in the winter. I follow your method for the winter, taking my cream and keeping it cool and sweet, until I have enough to churn, and then in the prepared apartment I warm my cream up to the proper temperature, say 65 degrees, and keeping it so it all ripens at once, even if it takes twenty hours at 65 degrees. In this way I make perfect butter. My method of ripening is this: I had a square box made, cutting a hole in the bottom of it, and fastening it tight with asbestos packing, and filling that box until it is about 14 or 15 inches high—cutting a hole in the side to put in a thermometer so I could tell the temperature. In about eighteen hours I can ripen my cream quite perfectly, and do better in winter than in summer, because I can have a better temperature for the cream to ripen in; and can procure a flavor that I cannot in any other way. I have often in my dealing come in competition with the separator made butter, and have in every instance driven that out, and that without difficulty.

In regard to the other question, I have found by careful experience that cows can come in in October and November with the same kind of care, and with the same kind of food, and will produce very nearly the same amount of butter, and sometimes more, than the same kind of cows coming in in April or May.

Mr. Oliver. I desire to know if you churn the cream at 55 degrees temperature?

Mr. Peck. No, sir. When I get my cream so that it begins to indicate lactic acid, I raise the temperature to 75 or 80; then leave it there for a few minutes, and reduce it to 60, or a little below. I find in that way I can more thoroughly take the butter fat out of the milk.

Mr. Oliver. I think you will find, with some breeds of cows, that if you raise the temperature of cream to 70, it is as high as it ought to be raised. Then, if you churn the cream of those cows at 70 degrees, you get the best results from it. There is a great difference in the cows as to the temperature of churning.

Vice President Barber. I find it depends entirely upon the body of the cream as to the temperature when you churn it. Take cream that contains 25 per cent. of butter fat, and in the winter that contains, say, 18. Then, take another lot of cream, and it contains 30. The heavier the cream is, the lower the temperature at which you can churn your butter.

Mr. Oliver. That is true.

Vice President Barber. So it is impossible to tell, unless you know the percentage of fat the cream contains.

Mr. Oliver. The point I want to make is this: First, that we can make better butter at a certain temperature; and the next point is, where the butter fat has a certain percentage of cream. With different creams you will have to take different degrees. With some of our cream, we used to churn for hours without the desired result. My wife thought she would make an experiment. She took the advice of a certain expert, and raised the temperature to 70 degrees, when she had no further trouble, as she got the butter rapidly from the cream.

Vice President Barber. I keep the breeds that will produce good butter; but I find if the cream is properly ripened, that the important thing is to have the temperature right. For instance, I used to churn from cream that rose from the milk in cans, at a temperature of 64, and the butter came in nice and solid. But if I should undertake to-day to churn the cream at that temperature, I would ruin my butter; but not if I churned at 48 or 50. It just depends upon how rich the cream is, if properly ripened.

Mr. Oliver. Have you noticed that the butter globule in some butter is much larger than in others?

Vice President Barber. Yes, sir; that is the reason of the difference. Take the Devon, which has a very small butter globule, and the Holstein-Friesian, which is also very small, and it is more difficult to churn.

Dr. R. P. Heilman (of Cameron). The gentleman (Mr. Peck) has said that he can make better butter in the winter than in the spring time. How does he do that? Has he ever tried the Separator Cream Company's method; or has he only tried the Cooley Creamery system?

Mr. Peck. No; I have only tried the method of the Cooley system.

Vice President Barber. I would just like to say a word in regard to the question asked by Mr. Peck, in reference to driving out the creamery butter. Years ago, when I used the creamer—and that is the way that I got my trade in the retail line—I had no trouble, nor heard any complaint whatever, about butter; but since I have been using my separator, I find my butter will not keep so well, or the keeping qualities are not so good. I believe with Mr. Peck, if butter is

made by the patent method with cream, if made properly in every respect, it will drive the separator butter out of the market.

Mr. Hoyt. Do we understand the gentleman to say that if the homestead butter, or if the separator cream, was handled by an expert close up to the ripening and churning point, the same as the creamery cream is, that it would make better butter?

Mr. Barber. I am not prepared to say; but I have had better results.

Mr. Hoyt. I have used the gravity system, and also the separator, and when I can keep my separator cream cold until I have enough to churn, and then put in my starter, and my cream, and ripen that cream properly, my separator butter has kept as well as the other. That has been my experience of about two years with separators.

Mr. Barber. My experience has been just the reverse; and I only have gone by what they told me. I was told whenever I used the creamery to put it in my receptacles. I have put it away there for several days, and it was as perfect as when put in.

#### MAJOR ALVORD ON HOME BUTTER.

Secretary Hamilton. We have with us Major Alvord, of the Dairy Division, U. S. Department of Agriculture, and we would be glad to hear from him on this subject, as it is in his line.

Vice President Barber. May we hear from Major Alvord?

Major Henry Alvord. I am obliged to you, Mr. President and Mr. Secretary; but I am afraid that I can give no information in addition to that which you have had on this particular question. I understand that it is the home butter that has been discussed; and most of those, since I have come into the room, have been referring to their experience with the milk and cream from their own herd of cows; and it seems to me it is the story of the chameleon over again. Every man has his own conditions, and it would be difficult to explain with certainty, if anybody would try, why certain results are right.

Now, the presiding officer has spoken of the matter in just exactly the same way in regard to his experience; and yet I have heard a precisely reverse experience, claiming, as they have adopted the centrifugal, mechanical method, it kept better for them, or better than when they used the gravity system. Certainly no one would like to explain this to a certainty without living a day or two with these gentlemen in their dairy; and it resolves itself, it seems to me, into the necessity of every individual studying and mastering his own conditions, which are almost sure to differ from his neighbor's, and adapt his own methods from other people, unless he is very ignorant, or cannot exactly imitate those who give him advice, which is pretty hard work.

I do not believe, myself, that there is any one method of making



butter, which results in a decidedly better article than by any other method. It depends upon the conditions, and upon the man or woman who is manufacturing the cream and making the butter. There is butter fat in any given lot of milk, and it makes really very little difference how you get that fat out of the milk into the form of cream, provided, you keep it pure and free from all taint, and control its temperature while so doing. The vital point or process in butter making, if butter is made from cream, is in handling the cream after it has been separated from the milk. There is more in the ripening of the cream, and in handling the butter after it comes out of the churn, than in any other of the operations of butter making, in my opinion. Those are the two points where the greatest amount of study is necessary—where the greatest amount of skill has been developed—and those persons who succeed best in handling their cream from the time it is separated from the milk, and before it comes from the churn, and who are most skillful in the manipulation of the butter after it comes out of the churn, until it reaches the customer, are, according to my experience, those who succeed the best.

Mr. Critchfield. I do not know that it will be well for us, with this lengthy programme, to prolong this discussion; and yet, it seems to me that some answer should be given to the question put by Mr. Thomas, of Cambria. I would say, in reference to the inquiry put to me and several others a little while ago by the gentleman from Cambria county (Mr. Thomas), that we are undoubtedly in about the same latitude, have the same climate, and the same water, and both counties are specially adapted to dairying. In 1893, men who were engaged in incorporating dairying companies, came into our county and established a number of creameries. I believe to-day (1899) not one is in operation. The stock has been bought out. The stock originally, as taken, I think, was \$50 a share. It was bought up at from \$2 to \$5, and some as low as \$1. One of the creameries was started up by a party from one of the Western States, and this party has bought up the stock at \$5 and \$10 a share, that cost, originally, \$50. One of the creameries is standing idle, and one of the merchants has bought up nearly all the stock at a trifling cost per share. So I take it that it does not pay ordinarily, or has not paid in Somerset county. Yet, notwithstanding the fact that those men who went into the creamery business in 1893 have had their experience, another set of men have come in within the last year, and, possibly, are operating also in your county at the present time. They have established a number of creameries at from \$4,000 to \$5,000 each, that ought to be established, in my estimation, at a cost not exceeding \$2,000 each. One difficulty is, that they are costing too much; and yet these people are, perhaps, not making any more money than they ought to. They are taking those citizens out to the State of Indiana, and some other States, and



showing them how the creameries that are established and operating there, are doing; and of course they are paying their expenses. Then, it takes a long time to establish a creamery, and their expenses and hotel bills must be paid in the meantime; so that they are not making more than they ought to make in a legitimate business. I take it, if farmers want to establish a creamery upon the co-operative plan, that they ought to do it themselves, and not wait for somebody to come and establish it. I do not believe in having anybody establish me in business. I think the farmers all over the country would do well, if they acted upon that principle.

Mr. White. I think the creamery men, or those interested in that line, from Columbia county, are glad to hear from Mr. Critchfield. We have gone through the same experience there. From about 1894 to 1895, on account of the same experience, \$50 stock could be bought for fifty cents a share. During this time, Mr. Harris and those following the same plan, their butter has come regularly into Bloomsburg, and the customers were perfectly satisfied, or better satisfied than with the creamery butter that has been produced under this co-operative system; though we have some private creameries that are making very good butter. The experience of Bloomsburg is, that Mr. Harris and others are giving a better butter than the private creamery system.

Mr. Stoughton. In our county (Butler), we have a great many co-operative creameries, and, as a rule, they are successful after a time. I will tell you the mistakes the people made generally. The creamery shark came along and every body went into this business; and everybody desired to manage the creamery, but couldn't do it. There was not enough co-operation among the farmers. I wanted my son to be a first class butter maker. He went into one of these establishments, and in about three weeks he was a full fledged butter maker; and we discharged the man who had charge of the creamery at \$75 a month and put my son in at \$35. He went ahead, with another man assisting, and at first they turned out right good butter, but it was soon apparent that they did not understand running the machinery. Then we lost butter fat to the extent of two per cent., and the loss continued to increase until there went out as much as a pound of butter in a comparatively small quantity of the skimmed milk. We didn't understand that. Pretty soon it was about 100 pounds of butter to about 100 pounds of butter milk, and the company had to pay for it. Nobody knew where the trouble was, excepting those who had been trained.

The first thing you want to do, gentlemen, is to build your own creamery. If a foreign company builds it, and they put a butter maker in for one year, he will make everything as dark as possible. I have men during the winter to take charge of our factory, which is

not exactly a co-operative factory, but what other co-operative factories have since taken up. We have operated ours successfully for several years, and we have built up our creamery, until to-day it is on the best footing of any I know. A number of hints were obtained by going over to the State College. It paid the patrons last year an average of twenty per cent. per pound, and the year before our average was 24 or 25 per cent.; that is, a pound paid for the making. After considerable wrangling we had to buy those fellows out, and get this disturbing element away.

There are many things to do before you can firmly establish these co-operative creameries. One of the first things is to get a butter maker who understands his business. Then, do not favor Mr. Jones or Mr. Smith, because they are extensive stockholders; but take their milk for what it is. Do not have any favorites in the factory, and treat all alike. If Mr. Smith sends in stock that ought not to be received, send it home, and his wife will see that which is proper is sent the next time. Do not let the creamery shark build the creamery. Build for yourselves. We had occasion to build one, and the very best we could do was done. We bought our machinery at about \$2,500, and we have a good creamery. With a good building and good machinery, properly put up, with a good cement floor, you will have a good creamery for a life time.

Mr. Thomas. In a locality where the farmers are few, and far between, and each farmer has but a few cows, and they of the ordinary kind, can a co-operative creamery be established under such conditions so as to pay? We have on our farms, on an average, of not more than six or seven cows.

Mr. Stoughton. You cannot get something out of nothing. I believe, if everybody goes into it, and there are industries near, it can be made to do fairly well. But it will pay your friends to get cows that will yield more and better milk than those they now have.

Mr. Thomas. Will it pay a farmer who makes two or three pounds himself?

Mr. Stoughton. No, sir.

Mr. Thomas. I am obliged to these gentlemen for giving this information, because it is a matter of interest to me and my people. If this is a good thing, I would like to encourage it; if a bad thing, I would like the people of Cambria county to know it.

I believe that the people the gentleman from Somerset (Mr. Critchfield) refers to, are the same men who are operating in my county. The conditions are the same, as I have stated. In our county we pay very little attention to the dairy business, though we raise sheep and horses there. On our farms we have but seven or eight cows, and our farms are a considerable distance from the other. Then, our

stock is of but fair quality. Under these conditions, what I wanted to know is, whether a creamery would pay.

Mr. Hutchison. I move that we postpone the further consideration of this subject for the present.

(Before the seconding of the motion.)

Mr. Piollet. I want to say a word to Brother Thomas rather in favor of the creameries, and the co-operative creamery. I follow next, I believe, on the programme. I was among the farmers of your vicinity, and they are pretty good grangers and are standing together as farmers.

Mr. Thomas. That is what we are doing.

Mr. Piollet. And they will stand together in the creamery. You can make more butter, and better, than as individuals; and there is no reason why you cannot manage your creamery in a co-operative way. I do not agree with all that has been said here; but I will not take up more of your time on the subject.

Mr. Herr. I would like to give my friend from Cambria county (Mr. Thomas) just one illustration. I have had a little practical experience. We had a creamery, and I had one hundred dollars' worth of stock in it. I was offered \$25 a share. The fellow that bought it up has it in his hands and is making the best kind of butter. Another creamery has been started under the same conditions, or very similar. A farmer wrote to me, and I told him not to encourage it; but they did go in and got fooled both times. But it was better done the last time. Unless you can build your own creamery at a fair price, even these sharks will tell you that you had better leave it alone. As my friend Stoughton has said, get a first rate butter maker, and a first rate manager, and then let him do it himself, and keep your own hands out; otherwise you will not make a dollar out of it.

Mr. Beardslee. With the unfavorable conditions that are surrounding these gentlemen, I would suggest that they take their money and put it into sheep; to reduce their herds and increase their flocks.

Mr. Biggs. The people of the country have got to be educated. What is going to be done with all the cows in the rural districts that do not pay for their board?

Mr. Critchfield. Shoot them.

Mr. Biggs. The farmers will not do that, unless you give them an education. You need not put your hands in your pockets, or bother yourselves about it, without this education. Start by educating yourselves and your friends, and it will result in the selling off the poor cows. There is no use to make a ten cent dairy, because the men in the city are engaged in the embalming process, and pay eleven cents for old and worthless butter, renovated, and put in on the market in competition with you. They claim that every kind of milk may be



into butter by the hands of skillful men. Why not work it up in the general way, so that you can make the money out of it? But you cannot make it until you find out the way. If it will not work under this system, there is a system as profitable as you can find. I have attended these institutes, and they are very good for those who buy and sell in quantities, putting their products on the general market. Let them take care of these; but let us take care of those men who have not the skill and cannot control the temperature, and who know very little about making butter, or it will be a long time before they make butter that will sell properly in the market. If the cows are bred up as they may be, and the butter made with sufficient skill, it will sell in the markets of the world.

Vice President Barber. The next paper is on "The Cultivation of Tobacco," by Hon. Louis Piollet, Wysox, Bradford county, Pa.

Mr. Piollet read his paper as follows:

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## THE CULTIVATION OF TOBACCO.

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By HON. LOUIS PIOLLET, Wysox, Pa.

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After receiving the programme of this meeting, I thought it would require an article too short to give the subject I am about to discuss, justice. Nevertheless, we will do it in the short way.

The cultivation of tobacco, I find, is varied in different parts of our country. I will endeavor to tell how it is cultivated in the section I reside, beginning with the sprouting of the seed. The seed is very small and hard to germinate, excepting under favorable circumstances. Rotten apple tree, or some other rotten wood, should be procured, made dry, sifted through a fine sieve, in which the seed is thoroughly mixed. An eight quart pan will be sufficient to sprout eight ounces of seed. The contents of the pan should be kept moist, by covering it with a damp cloth, and then placing it in a warm room of 80 degrees and not allowed to get cold. In about four days the seed will be sprouted; when one-fourth of an inch long, mix with sifted coal ashes and sow evenly on bed. One ounce of seed will cover 150 square feet. The seed bed should be covered in the fall with horse manure, then in the latter part of March, remove it. Make an excavation one foot deep, put in twelve inches of fresh horse ma



nure that is about ready to ferment, replace the dirt on the manure, firm it thoroughly, and make fine and smooth. On this, sow the seed, rake in lightly with fine rake, press with smooth board by standing on it, and wet the bed thoroughly and cover it up. The frame about these beds should be five feet wide, running lengthwise, east and west, making the north side higher than the south, giving sufficient slope to carry off most of the water. After the beds are sown, they require attention every day, watering and weeding; and in about forty days from the time of sowing, the plants are ready to set out.

The soil best adapted for growing tobacco is a sandy loam. This soil, if taken as a starter, should be covered with a clover sod, and during the winter and spring, a liberal supply of barnyard manure should be applied. Horse manure is the best; spread it on the field as fast as made; care should be taken, however, to have it evenly distributed, so that the clover in the spring can come up through it. About the middle of May, plowing should begin. Have sufficient horse power to run the plow eight or ten inches deep, turning under all this manure and clover, which will be a foot high or more, then follow with a heavy roller; harrow and roll until the soil is thoroughly packed and pulverized. A smoother is often used to level and pulverize.

When the twenty-fifth of May has arrived and the plants are ready to be set out, care must be taken in removing them from the beds, lest you destroy as many as you take out and render your beds worthless. Any tobacco farmer knows, that at the time for setting, without plenty of good, healthy plants, success is not in sight. All large growers are now using tobacco setters, a machine operated by three men; one to drive and two to drop. This machine carries a tank which supplies water to each plant, making its furrow, and covering the roots of the plants and pressing the dirt firmly around them. The rows are three or three and one-half feet apart, while the plants are set out fifteen or eighteen inches in a row. The planter has its marker attached, so the driver has to use some care in getting the rows straight. After each setting, a man follows over the ground setting out plants that may have been missed by the machine. Nothing is done until after a shower, when all that have been set out are examined, and those that cut worms have destroyed or where the plants have failed, are replaced.

Thorough cultivation with the tobacco plant is very essential. A cultivator with narrow teeth is first used, going deep; next the dirt should be slightly removed from the plant with the hoe, going as close as possible; then very soon the dirt should be replaced again. As the plant grows larger and the roots begin to spread, shallow cultivation is necessary. The cultivator should go through the crop

every week, always after a shower. A fine dust blanket is a good retainer of moisture, and the tobacco plant needs plenty of it.

Cultivation ceases when the plant is ready to top. There is a difference of opinion among growers as to the proper time to top. Some leave it until the blossoms appear; others, however, nip out the bud when the desired number of leaves are formed on the stalk. If you follow the latter plan, you will have more suckers to contend with. Some top high, others low. High topping gives more leaves, but not as large as the low topping. There is not much difference in weight, but some think the high topping gives a thinner leaf. After topping, suckers will start out from the stem of each leaf, and they are more vigorous at the top leaves and will grow very rapidly. As soon as they are six to eight inches long, they should be removed. That is what is called, "top suckering," when the men go through the field and break them off; at the same time they look for worms, and often it is necessary to make it a business in hunting worms. In about twenty days the plant is ready for harvesting. Then a second suckering is necessary, and it has to be very carefully done. The leaves are large and brittle and break easily. All the lower leaves now have suckers started, and every one has to be examined and broken off, which is slow work.

Harvesting is now on. After the dew is off and the gum starts, a man with a pair of tobacco shears cuts the plant close to the ground, laying carefully to one side. As soon as the plant wilts sufficiently so it will not break, it is taken up and stuck on a tobacco lath, four feet long with six wire nails driven diagonally, three on a side, placed on a wagon with rigging made to fit the lath and high enough so the tips will not strike the bottom. If the wagon is not in the field, extra benches or horses, should be placed near the rows and the plants hung on them until the wagon returns. This tobacco is hung in a shed on poles placed four feet apart supporting the lath, which are about six inches apart. Some hang on poles with twine. The poles are placed one foot apart in the shed, and the tobacco plants are placed on each side of the poles, which are four inches thick, and fastened every four inches with twine.

The shed or barn in which the tobacco is hung must be well ventilated. An opening in the peak of the roof and on the sides is necessary. These ventilators must be so situated that they can be closed. If the tobacco is green when hung, all the ventilators should be opened, and after it begins to cure and drop so that each plant hangs by itself, most of the doors should be closed, and a slow process of curing should proceed; by doing this you get better colors. It is quite essential, however, that you do not leave these doors closed, if a warm, muggy, misty day comes, or you will have some pole burn in your tobacco.

The tobacco remains hanging until all the leaves and stems are thoroughly dried or cured. After this state is reached, the first warm rain or damp weather which comes will soften the leaves so it can be handled without breaking. The tobacco is taken down, twisted from the lath and put in ranks, the tips lapping over each other and the butts on outside; if very damp, these piles should not be over three feet high; if not, they can be made higher. As soon as taken down, cover up with boards or old carpets to retain the moisture. In a day or so after being taken down, stripping begins. The leaves are all stripped from the stalks, placed in a box, with paper in bottom to wrap with. This box should be ten inches square and usually three feet long. The tips of the leaves should lap over each other and the butts kept even. These bundles weigh from twenty-five to thirty pounds, wrapped in paper, and tied with twine. It is then ranked up and ready for the buyer. Some growers prefer to assort their own crops; when this is done it adds about two and one-half cents per pound to the crop.

It must be remembered by any one who contemplates going into the business, that the tobacco crop is very exhaustive on land and requires constant application of fertilizers of some kind. I will not go into the profit derived from this crop, or give the statistics as to the amount grown and consumed, but will leave that for your investigation.

Vice President Barber. Owing to the shortness of time, we will have to limit the discussion to five minutes to each person from now on. If there is any discussion on this subject, we will be glad to have it.

#### TOBACCO-DESTROYING INSECTS.

Dr. H. T. Fernald. There is one point in connection with the growth of tobacco in this State which I think ought to be mentioned. As near as I can understand, the tobacco crop of this State yields about \$340,000 a year to the grower; and it has been grown in the State now every where it can be grown, to advantage. As has been said, it is exhaustive of the soil. There is another condition, and that is, that in addition to the insects which have been referred to, some new insects have made their appearance within the last year or two, which are, in some places, at least, of rather serious importance. In Lancaster county, in some districts it has been impossible to raise tobacco on account of this trouble. In some of them I find that parts of the beds may produce plants as well developed as any one could ask for; while in other beds right alongside, you have absolutely nothing at all, whilst the entire bed should have the same kind of plants. A part of this trouble is, unquestionably, due to poor seed. But in addition, I find there are two forms of animal life which are causing a



great deal of trouble. One is the snail, and I have found no one in the tobacco districts who can master this disagreeable pest. The snail goes out at night to feed, sleeping behind sticks, or in some other way, during the day. The only remedy I can suggest is, to pull up the plants that are nearest the borders of the bed. Then to take bran, and mix with it Paris green, and spread the mixture on the ground where the plants stood. In most cases the snails will eat the bran, and eat enough Paris green to destroy them. Another method is to take very fine loam dust. The snail will attempt to cross that; and so long as the glands can provide enough to keep them from slipping, he will keep on going; but after the slime gives out, he remains there stranded on the sand.

Last week I found an entirely new insect injurious to tobacco, in Lancaster county, and one not hitherto reported. It is a little insect, about the size of a pin point, if you do not get too far toward that end of the pin; it is brown in color, likes the tobacco leaf or blade, and will feed on it by cutting a little hole in it when not disturbed. Thus it will break through the leaf, or the surface of the leaf, and give a magnificent place for the leaf fungii to get in. Whilst the spotted leaf tobacco is somewhat in favor with some tobacco manufacturers, some of whom sprinkle acid over it to bring this about, yet this insect is injurious to the tobacco. The insect and the snail are now appearing in destructive numbers in quite a number of parts of the State. While on the tobacco question, you should, at least, be prepared, and know what to expect, and know how to meet it.

Mr. Brown, (of York county.) I came from a locality where tobacco has been grown for more than 60 years. I find we have something new and hurtful also. The spot on the tobacco is a very serious one this year. The farmers have an abundant supply of plants. York county is raising now about 8,000 tons of tobacco annually, and Lancaster county something more than double that amount. Our trouble is not so much from insects, and raising the plants, and developing them. The trouble that our tobacco growers have had for some years past, has been to get a paying market for the tobacco; and that has caused a good deal of change amongst our people to a finer tobacco. If we can raise tobacco that will be valuable as wrappers, it seems to me that is not a very slow business; but if we cannot get more than filler prices for the tobacco, running from one to three cents, it will not do.

I would like to ask Mr. Fernald what he knows in regard to the prices? Some of the Lancaster county farmers attempted last year to sprinkle some solution calculated to give their tobacco the smell of Sumatra tobacco.

Doctor Fernald. I am informed that some of them did it.

Mr. Brown. What is it that they used?



Doctor Fernald. They didn't tell me.

Mr. Brown. The cigar makers also are in the secret.

Mr. Hoyt. Do they put it in their cigars?

Doctor Fernald. They use some acid.

Mr. Brown. Do you think it damages the leaf?

Doctor Fernald. It may do no harm. If any person likes tobacco, he can use it.

Mr. Hoyt. You will find the prescription in the next to the last report of the Department of Agriculture. I do not remember what it is now, but there are two acids combined. It is used in my neighborhood by very many growers, because it spots the tobacco very much like Sumatra. I cannot tell the difference between them.

While I am up, I would say to those who have not grown tobacco, don't. I have grown it for twenty years. It is the most unsatisfactory crop when you get down to the lowest prices. Those who are at it, let them keep at it; but you try something else. (Loud applause.)

Mr. Critchfield. I think it would be a good thing for humanity, if it were all treated with sulphuric acid. (Laughter and applause.)

Mr. E. S. Hoover, of Lancaster county. I have the pleasure to represent that county (Lancaster) in part, here to-day. I would say that the gentleman who read the paper has so well covered the ground, that we have little more to say, coming from a tobacco raising county. But one thing I want to call attention to, and that is, the preparing of the seed bed, as adopted by some of our best tobacco growers. When the bed is prepared, and ready for the seed to be sown, some of our best growers take a brush pile, or some dry wood, which they burn so as to heat the bed from the burning brush or wood, reducing the brush or wood to ashes. Thus they heat the bed thoroughly, and after it is thoroughly cooled, they rake the bed again, and then sow the seed. The object of doing that is to destroy the lives of any insects or germs in that soil.

Now, in regard to the snail. I think the suggestion of the gentleman is a very good one, and so in regard to the bran, depositing Paris green with it. And then again to use the rotted soil, or loam. But I want to say that there is a remedy for the cut worm in the tobacco, where the worm destroys the plant after setting out; and it is very similar to what he suggested in regard to destroying the snail. Some of our farmers mix very freely in a small portion of bran the Paris green, and about the time the plant is three or four inches high, or in leaves, they take a pinch of the mixture and drop it right into the heart of the plant. We have succeeded in that way in destroying the cut worm, and saving the plant.

Vice President Barber. The next paper is on "Underdraining as an Investment," by James K. Murray, member from Montour, Pottsgrove, Pa.

Mr. Murray. As we are looking for investments, and National banks will pay but two per cent. for money left with them for a year, I think I can give you a plan by which you can make a larger interest, and in some cases, at least, in less than a year.

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## UNDERDRAINING AS AN INVESTMENT.

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By J. K. MURRAY, *Pottsgrove, Pa.*

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The subject of underdraining is one of the most important that can interest the Pennsylvania farmer. Modern appliances aided by science, has now rendered the task of thorough drainage so simple and easy that there seems no excuse for allowing the soil to lie water soaked for two or three weeks at a time, rendering it heavy and sour, and reducing its value one half or more during the growing season; when an expenditure of from ten to fifty dollars per acre would place it in the best possible condition for cultivation, and add two or three weeks to the length of the season by its becoming dry sooner in the Spring and after heavy rains.

There are but few soils in the valleys and along the foot hills that are not beneficial by underdraining. It is not always necessary to find water standing upon the surface in dry weather to determine whether a piece of land should be drained. But any soil that will hold water on the surface for twenty-four hours after a heavy rain, where the wheat or clover freezes out in winter, or where plowing can not be done within thirty-six hours after a soaking shower, needs draining. Also grounds around the building often so wet as to require logs and boards to walk upon for many weeks every year, as certainly need underdraining as the swamp in which a cow is occasionally lost by miring and from which the miasma causes the annual doctor bill of, perhaps, the price of another cow or two.

Considering the great need of underdraining, the observant traveler in passing through the country and noticing the patches, large and small, in fields of grain covered with pools of water, destitute of a crop or otherwise, indicating an irregular supply of moisture in the soil, might suppose that no practicable method had as yet been discovered by which the owners might find relief. While to the contrary, history records the fact that as early as the beginning of the

sixteenth century, underdraining was carried on to a great degree of perfection, and that the system of that age compares very favorably with our present methods.

In the American Encyclopaedia of Agriculture we read the following:

A letter to the late John H. Klifart, written by a member of the French Agricultural Society, states that within the town of Maubenge, France, stood a monastery, the date of the erection of which is not clearly known, but it is of pure Gothic style. The lands attached to this were renowned for their fertility. After the French revolution, the estate was sold. Excavations being made during the process of alterations, two irregular systems of pipe drains were found, laid at a depth of four feet. These pipes are represented as having been ten inches long and four inches in diameter, one end expanding into a funnel shape, the other tapering to a cone, made of earthenware and vitrified in burning. Of the age of these drains nothing is known; but a grave of 1620 was over one of them. The most interesting fact in reference to this piece of drainage, is its durability. To have remained, draining the land perfectly for nearly three hundred years and in dimensions, materials and system nearly like that of the present day. This is a most eloquent substantiation of the imperishable nature of drains when carefully laid. As it is, that underdraining, when properly done, becomes a permanent investment.

Having thus far shown the needs, the practicability as well as the permanency of underdraining, we will, for a few minutes, consider the question of profit and loss. By several estimates made, the writer has found the cost of labor necessary to produce and deliver in market the crop of an acre of wheat or corn, to be about twelve dollars on land that is well drained. Wet or spouty land costs more. Taking twenty-two bushels of wheat as the average crop on good soil at 90 cents per bushel, gives us \$19.80, leaving, after deducting the cost of labor, \$7.80 with which to pay interest, tax, repairs, etc. On wet or soggy land, ten bushels may be considered a good yield, worth \$9.00—\$3.00 less than the cost of labor on dry land, and a clear loss of over ten dollars, which we might call the income of money that should be invested in underdraining, and would be over 21 per cent. on an outlay of \$50 per acre, a sum that is ample, under extreme circumstances, for thorough underdraining. But as this income may seem large, and whereas it is frequently necessary to carry drains through parts of a field not needing drainage, in order to get outlets, and from which no increase would come, we will say that, on a general average, \$5.00 per acre each year is the lost value of crop by working wet land, which would give us ten per cent. on our investment. This, if the work is judiciously done, may be considered a good investment as well as a permanent one.

While the members of the Board were standing,

Mr. Critchfield. I would like very much if those who have been invited to sit with us be asked to vote on these resolutions. I know there are some who would like to do so, but they do not think it in place, without invitation.

Secretary Hamilton. I believe the expression ought to come from the State Board. It was the body with which the Secretary was identified. Those outside the Board do not have the same interest in the Board that Mr. Edge had. It seems to me this is a kind of family matter.

The resolutions were announced as carried by a unanimous vote.

Vice President Sexton. Is there any further business? If not, a motion to adjourn is in order.

On motion of Messrs. Woodward and Hiester the Board then adjourned to meet in Harrisburg in regular annual session on Wednesday, January 17, A. D. 1900.

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## MINUTES OF THE CONFERENCE OF LOCAL FARMERS' INSTITUTE MANAGERS.

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Bloomsburg, June 1, 1899.

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The Local Farmers' Institute Managers' Conference was called to order at 9 o'clock A. M., Thursday, June 1, 1899, by G. G. Hutchison, Esq., of the Department of Agriculture.

On his motion, seconded by Prof. Heiges, Gabriel Hiester, Esq., was unanimously elected chairman.

Mr. Hiester was escorted to the chair by Messrs. Piollet and Heiges, and introduced to the audience, who greeted him with hearty applause.

Secretary Hamilton called the roll of county chairmen of Pennsylvania Farmers' Institute Committees, when the following gentlemen were found to be present:

| County.          | Name.                | Place.          |
|------------------|----------------------|-----------------|
| Allegheny, ..... | J. S. Burns, .....   | Clinton.        |
| Bedford, .....   | G. Holderbaum, ..... | Bedford.        |
| Berks, .....     | H. G. McGowan, ..... | Geiger's Mills. |
| Bradford, .....  | L. Piollet, .....    | Wysox.          |



| County.               | Name.                       | Place.              |
|-----------------------|-----------------------------|---------------------|
| Butler, .....         | W. H. H. Riddle, .....      | Butler.             |
| Cambria, .....        | J. J. Thomas, .....         | Carrolltown.        |
| Cameron, .....        | R. P. Heilman, M. D., ..... | Emporium.           |
| Centre, .....         | John A. Woodward, .....     | Howard.             |
| Chester, .....        | M. E. Conard, .....         | West Grove.         |
| Clarion, .....        | G. T. Henry, .....          | Piолlet.            |
| Clearfield, .....     | A. Judson Smith, .....      | New Millport.       |
| Clinton, .....        | Joel A. Herr, .....         | Cedar Springs.      |
| Columbia, .....       | H. V. White, .....          | Bloomsburg.         |
| Crawford, .....       | M. W. Oliver, .....         | Conneautville.      |
| Cumberland, .....     | B. D. Biggs, .....          | Shippensburg.       |
| Dauphin, .....        | S. F. Barber, .....         | Harrisburg.         |
| Delaware, .....       | G. E. Heyburn, .....        | Chadd's Ford.       |
| Elk, .....            | J. M. Wittman, .....        | St. Mary's.         |
| Fayette, .....        | J. M. Hantz, .....          | Merrittstown.       |
| Franklin, .....       | C. B. Hege, .....           | Marion.             |
| Fulton, .....         | W. C. Patterson, .....      | Webster's Mills.    |
| Greene, .....         | John H. Smith, .....        | Nineveh.            |
| Huntingdon, .....     | G. G. Hutchison, .....      | Warrior's Mark.     |
| Juniata, .....        | Matthew Rodgers, .....      | Mexico.             |
| Lackawanna, .....     | H. W. Northup, .....        | Glenburn.           |
| Lancaster, .....      | W. H. Brosius, .....        | Fernglan.           |
| Lawrence, .....       | J. B. Johnston, .....       | New Wilmington.     |
| Lehigh, .....         | J. L. Schreiber, .....      | Hosensack.          |
| Luzerne, .....        | J. E. Hildebrandt, .....    | Lehman.             |
| Lycoming, .....       | A. J. Kahler, .....         | Hughesville.        |
| Mercer, .....         | T. P. Munnell, .....        | Indian Run.         |
| Mifflin, .....        | D. E. Notestine, .....      | Lewistown.          |
| Monroe, .....         | Randall Bisbing, .....      | Minsi.              |
| Montgomery, .....     | Jason Sexton, .....         | Spring House.       |
| Montour, .....        | J. K. Murray, .....         | Pottsgrove.         |
| Northampton, .....    | B. B. McClure, .....        | Bath.               |
| Northumberland, ..... | C. C. McWilliams, .....     | Elysburg.           |
| Perry, .....          | J. E. Stephens, .....       | Acker.              |
| Potter, .....         | C. L. Peck, .....           | Coudersport.        |
| Schuylkill, .....     | W. H. Stout, .....          | Pine Grove.         |
| Snyder, .....         | J. F. Boyer, .....          | Mt. Pleasant Mills. |
| Somerset, .....       | N. B. Critchfield, .....    | Critchfield.        |
| Sullivan, .....       | John W. Rodgers, .....      | Forksville.         |
| Susquehanna, .....    | C. W. Brodhead, .....       | Montrose.           |
| Union, .....          | Amos Scott, .....           | Spring Garden.      |
| Warren, .....         | Geo. A. Woodside, .....     | Sugar Grove.        |
| Westmoreland, .....   | M. N. Clark, .....          | Claridge.           |
| Wyoming, .....        | Elmer Detrick, .....        | Russell Hill.       |
| York, .....           | Gerard C. Brown, .....      | Yorkana.            |

Chairman Hiester. We have a pretty full programme this morning; but it is the desire that we have a fairly full discussion. I would suggest that any person having any remarks to make on any subject, be brief and to the point. Speak, if you have anything to say; and stop, when you have everything said.

The first topic is "Rocks and Soils," by William H. Stout, member from Schuylkill, Pine Grove, Pa.

Mr. Stout. Mr. Chairman: Before I read my paper on "Rocks and Soils," I wish to correct a wrong impression, one which seems to prevail among the people, and this Board particularly, that I am a geologist. I do not claim to be anything of the kind; I am simply a plain farmer; but as agriculture rests upon the soil, the foundation of agriculture is geology; and for my own edification I have read something about that science. I am surrounded by a whole lot of rocks. I live only about 40 miles from here in a straight line; but, on account of the geological formations, I had to go 100 miles around to get here.

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## ROCKS AND SOILS.

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By W. H. STOUT, *Pine Grove, Pa.*

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Geologists divide into divisions and classes the various formations, and the general accepted theory is, that what we know as the earth was once a mass of nebulous matter occupying a part of space and was in a gaseous state; this contracted in cooling, and separated the minerals, metals, etc., from the water and air. It should be noted, that all substances may exist in a liquid or gaseous condition, and that it is only a matter of temperature producing the change. Water is solid at what we call the freezing point, while iron is solid at a much higher temperature, and so it varies with all substances, being a mere matter of temperature when a substance may be a solid, a liquid or a gas.

At a certain temperature the earth formed a crust, a cooling mass represented in the cinder banks of furnaces, and called the period of slag formation, supposed to be the oldest rock, the nucleus upon which subsequent deposits rest. The cooling of the matter upon the earth's surface brought about contraction, thereby causing depressions and rents, through which the interior gases, steam and molten matter found escape, until a more settled condition prevailed, when the atmosphere composed of gases, occupied their respective positions, and became active elements in shaping the later feature of the earth's surface; until finally the earth assumed a temperature suitable for the growth of animal and vegetable matter, the changes having from

time to time produced the conditions with which we are more familiar and are practically interested in. The origin of soils begins at a time when the elements, air, water, heat, and cold became agents, mechanically and chemically, to break down, dissolve and disintegrate the existing solid crust of the earth, into those of stratified or sedimentary deposits, forming new from old.

From known conditions prevailing at various depths in deep mines, it is proven that the temperature changes one degree with every 50 feet of increased depth, so that at two miles, the temperature of boiling water would be reached at 212 degrees F.;

At  $7\frac{1}{2}$  miles, 750 degrees, iron red hot;

At 18 miles, 1,850 degrees, melted glass;

At 28 miles, 2,700 degrees, when everything would melt.

There seems to be some difference of opinion as to the interior condition of the earth, some believing it to be a plastic, molten mass, while others contend that it is more solid than liquid, owing to the great pressure of surrounding matter. We will not dispute the difference but be satisfied that it is very hot, as the lavas from volcanoes and the geysers throwing out hot water and steam, indicate.

While we see around us a settled condition, apparently at rest, great changes are going on and convulsions taking place, constantly changing the topography of the world, unobserved by us. The internal forces breaking out in volcanoes bring to the surface ashes and great quantities of lava covering over large areas, filling up valleys, sometimes doing great damage to the surrounding sections, resulting in the formation of rich rock material, which in time, disintegrates and forms a rich natural soil. The mechanical action of heat and cold, the chemical action of air and moisture, with rain and wind, are all factors in producing decomposition of all kinds of rocks which form the basis of all soils. Water is the great force in nature, transforming in all directions, as running water and solid ice, breaking up and carrying the particles to near and distant localities.

All portions of the earth are supposed to have been alternately covered by seas, the waters of which, even as now, were teeming with life, from the quite small coral insects to immense sea monsters, which yield up their remains incorporated with the material deposited, from stratas of which some are now found in the red shale around us, filled with the remains of shells and the work of coral insects, together with fish remains.

If we imagine the mountains around us were once miles higher than we see them now, reduced to their present level through the abrasion of the elements, principally through water action kept in motion without rest, now as vapor, then as rain, rushing to the seas and returning again, producing a rainfall in this latitude of about five feet average, annually, amounting in a century to five hundred feet.

and in a thousand years, it would stand a mile deep, if it remained where it falls; so we need not be surprised to know that our farms are gradually going off to make deltas of our rivers, and that we lose imperceptibly the finer particles of our soil and the fertilizers, sometimes as well.

One of the most interesting subjects connected with the study of the origin of soils, is a stretch of country just north of here, where, during the glacial period a deposit of mud, sand, gravel and large boulders, were deposited by immense glaciers, miles in depth, which, during their existence, planed off mountains, filled up valleys, and brought material hundreds of miles from the north and east of us, and dropping from the edge of the melting ice, now remain and form a distinct line trending northwest in to New York, returning into Pennsylvania and across the continent. This so-called drift deposit is different from any other, in that it forms a loose, yet in most places, a fertile, easily cultivated soil, rich in fertility because of the various rock formations from which it was carried, ground up and mixed together, and is, therefore, a soil characteristic in itself; and in a general way is better adapted to a variety of crops than soils derived from the rock underlying the soil.

If we were to depend upon decomposed rock alone for soil to produce crops, we would not succeed very well, although there may be an abundance of mineral matter in the decomposed rock, it is not available without an admixture of vegetable matter. The soil in agricultural use are such as have accumulated during long periods of time, consisting of the remains of animal and vegetable life mixed with the disintegrated rock, of the various formations of lime stone, or granite, shale, slate and sandstone. Recent investigation made at Cornell Experiment Station, reported by Prof. Roberts, of soil analysis, indicate that there is an abundance of latent plant food in the average soil, yet produce only moderate crops under ordinary cultivation.

In eight inches of soil the average of sixteen samples was found to contain, after removing four consecutive crops, without manures or fertilizers, yet over a ton of nitrogen, one and one-quarter tons of phosphoric acid, and over four tons of potash in an acre. In one sample analyzed, containing more than forty-three tons of potash per acre, an application of two hundred pounds of muriate of potash, the potato yield was increased by forty bushels, while the application of nitrogen and phosphoric acid, apparently, diminished the yield.

Taking the present prices of fertilizers, a ton of nitrogen is worth \$300, a quarter phosphoric acid \$80, four tons potash \$240, or a total of \$620 worth of plant food in a single acre, yet a small quantity of potash benefitted the growing crop. Summing up the result, that more cultivation, adding of humus to the soil to make it loose, and



holding moisture by turning down crops grown for the purpose, much of the plant food lying dormant in the soil would become available. No doubt that soil analysis indicates correctly, what chemical constituents are contained in the sample examined; but that the chemist, with his acids, retorts and intense heat, can abstract substances from mineral elements that the roots of plants can appropriate very slowly and therefore are not available plant food. The extracting of nutriment and the assimilation by plant roots depends upon the warmth and moisture of the soil, for the rootlets to obtain in solution the elements necessary to vigorous growth.

The carbonic acid, ammonia and nitric acid obtained from rain and snow, together with the acid secreted by the roots, dissolve the mineral elements in the soil, rendering up assimilable food. Although not endowed with reason and instinct like animal life, roots manifest the same inclination in searching for nourishment, going a long distance in search of moisture and manurial substances in their vicinity; and it is quite common to find drains blocked and the mouth of wells a mass of fibrous roots as fine as thread. Of some fifty of sixty elements recognized in chemistry, only three are of importance to us as farmers. Given a soil of proper consistency, neither too wet nor too dry, with potash, phosphoric acid and nitrogen in available condition, we may safely count upon successful crops with proper care and cultivation.

As you have all probably heard it explained, or read of the proportions of the elements of plant food in various crops and plants, some containing more, some less of any one, the business of farming resolves itself into the simple fact that it is our aim to obtain nitrogen, phosphoric acid and potash from some source in a crude form, and resolve it into the same elements in other forms, changing that which exist in manure, lime, soil, bone, phosphate or crops plowed under, into butter, milk, cheese, hay, grain, eggs or poultry, all of which are only condensed forms of the three important elements so often referred to; so that we are engaged in the process of refishing substances, and by this slow chemical process change the one into another of more value, and by the difference in value make ends meet.

(The paper was loudly applauded.)

Chairman Hiester. The paper is now before the convention for discussion.

Mr. Eves. I think there are soils in this neighborhood that with the addition of something else than potash, would cause an increase; I think there are a great many soils in Columbia county where phosphoric acid alone is needed, and the other constituents are not needed for present use.

Mr. Critchfield. The condition that Mr. Eves speaks about very likely exists all over the State, and all over the country. But there

are certain soils, the composition of which is variable on various farms, from the surface to the lowest roots of plants; so that what we need to do, when we come to fertilize our land, is to be sure that we do not spend money for that which we do not need. On a part of my farm I have never found it necessary to use any potash. On that ground hard wood grew originally—ash, hickory and dog wood. On the other parts, where the soft woods grew originally, I found I could hardly get too much potash; and so where other trees grew, other ingredients were required. I think these conditions will vary according to the local conditions of our several communities. I think that idea was brought out by the essayist.

Dr. Rothrock. I would like to ask the gentleman whether he noticed any difference in the glacial soil, in its retention of water? It absorbs more water as a rule than most soils. And how the crops do in times of drouth in that soil? Do they stand it better or worse than a soil not accounted for by glacial action?

Mr. Stout. I can only answer that theoretically, because I am only beginning, as it were, to cultivate that soil. I am cultivating a soil that loses its moisture very readily; but I notice without trouble that on the soil of the glacial period, as a rule, the trees that grow—the forest and orchard trees—grow to a very much larger state than they do with me in a richer soil. And it is natural to suppose that the made soil, filled up, it may be 40 or 50 feet deep, is the rock and stone ground to a fine material; and thus the soil will hold more moisture, and the moisture penetrate down to deeper depths, so that trees set on a shallow soil would not have this advantage.

Dr. Rothrock. That is undoubtedly true, also, because a large part of the moisture that would otherwise be lost, is held in the ground on account of the wide extent of the shade—and the reverse is true where you diminish the shade—and the leaves hold a certain amount of moisture. When you come to calculate a crop, one from the moraine, or the shallow soil that you speak of, and on the glacial soil, my question is whether the latter actually gave out more water along through the year than the other soil did. I know there is more water there.

Mr. Stout. Of course I cannot speak on that subject with any sort of satisfactory evidence. As you are familiar with the mountain ranges, and know the terminations of the moraines, you could tell better than I. There is no doubt that in the moraine itself there is more moisture. Some parts of it is almost all brown stone, or that brownish stone, of all sizes down to a pea, and up to a large rock. I think it would give more moisture, because these are all likely to protect the moisture from being absorbed by the atmosphere.

Colonel Henry C. Demming. I was much interested in the paper, as it not only gave information, but many subjects for thought. With

the advances which have been made in geology, mineralogy and chemistry, there is much room for advancement, by the use of these sciences, in agriculture. It is a comparatively easy matter now to have soil analyzed; and the farmer that first takes advantage of analyses of his own soil, and knowing what the soil should contain, will be first in the field to know exactly what to buy to increase, at least expense, the fertility of his land. Many fertilizers now purchased contain ingredients that counteract what would other wise be beneficial elements in the fertilizer purchased. Then, soils sometimes contain within themselves every necessary ingredient, but not sufficiently pulverized or decomposed to be available. Sometimes material which will more finely pulverize the earth are far more necessary to bring the soil to its highest standard than the best fertilizer on the market. Some one has said that the greatest study of man, is man. Next to that, the greatest study of the farmer is the soil of his broad acres. When he knows perfectly his soil, with ordinary modern intelligence, he will know what his soil most needs. I believe the time is coming, and it may be not far distant, when the best educated and most practical farmer will be able to so utilize the now worthless rock and stone on his land, perhaps in conjunction with a minimum amount of foreign material, as to bring every foot of his soil up to the highest state of fertility. I hope the farmers of Pennsylvania will be the pioneers in this new field of action and prosperity. (Hearty applause.)

Chairman Hiester. We will take up the next topic, "Soil, Plants and Plant Food," by L. W. Lighty, Esq., East Berlin, Adams county, Pa.

Mr. Lighty. Mr. Chairman, Ladies and Gentlemen: This morning I requested the Secretary of the Board, and the Chairman, to excuse me from reading this paper. I was not present at the organization yesterday, but I am told there was a committee appointed on applause. About the only applause I will get will be that given when I am through, because this has been written entirely from a farmer's standpoint. There is nothing scientific about it. In fact, it is not suitable anywhere except in an audience, perhaps, composed entirely of farmers.

## SOIL PLANTS AND PLANT FOOD.

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By L. W. LIGHTY, *East Berlin, Pa.*

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One of the by-gone politicians once said: "It is a condition and not a theory, that confronts us." It is thus with us farmers to-day. A condition confronts us and we have tried various methods to change the condition, often with indifferent success. The condition is, that we must sell many of our products at cost, and sometimes below cost, which leaves us in a bad financial shape, when at best the profits are very small. There are a few favorably situated individuals who cater to the wealthy classes, those who want to pay big prices to show their superiority (?) over their more unfortunate (fortunate, should I say), neighbors.

These few producers can, of course, make their own price, if they have selected goods. But this market is very limited indeed. The great majority of farmers and tillers of the soil, must supply the people of our large centres of population—the working people—the men and women who like themselves, toil daily for their subsistence; who have to save in order to make ends meet; who have to purchase their food at a low figure or go hungry; who have no money to purchase luxuries, and their meagre wages often don't allow them to even indulge in a plenteous supply of the needful. Under these conditions, there is left for us farmers, only one remedy, and that is to reduce the cost of production, so far as to leave a margin between the cost and the selling price.

Let us learn and profit by the lessons taught by other vocations of work. They make use of all the latest and best knowledge this world possesses. They utilize the discoveries of modern science, and we all know they have reduced the prices to consumers very much and still are enable to pile up profits by the million. Any number of examples might be cited, but we all know and have seen it everyday in the improved processes in our manufactories. Take, for instance, the panel door—the door used in all our ordinary houses. A few years ago the planing and sand papering were done by hand at a cost of twenty to thirty cents each; now the door is finished, planing, sand papering and all, for about two cents each or less by machinery. A buggy whip, an implement used by every farmer, I suppose that cost



forty cents ten years ago, is now sold for ten cents, and yet the whip trust flourishes.

But you say, by this time, what has all this talk to do with soil plants and plant food? It is this: Manufacturers and producers along other lines have studied and investigated their business and the materials on which their income depends, while we farmers have depended, very largely, on tradition and guessing. While that much cursed monopoly, the Standard Oil Company, were employing chemists to analyze dollars out of the material they worked upon, we farmers laughed at the idea that a chemist could tell us anything that we did not know already. Had not our fathers been farmers all their lives and our grandfathers, too; and have we not learned farming from them? They made money; why should not we? This hugging of tradition and ignoring modern scientific discoveries is just what places the vocation of farming at the tail end of the cart.

The farmer is dependant on the soil for his living and his profit. The agricultural capabilities of much of our soil is almost unlimited; 239 bushels of shelled corn, 68 bushels of wheat, 800 bushels of potatoes, and 1,000 bushels of strawberries are certified possibilities, while we with our crude and traditional methods generally do not reach the half of these figures, and frequently not the one-fifth.

At first, when I started farming, I plowed the soil because my neighbor plowed his. Seeing him engaged in some operation, I followed; when he reaped I did also, and when we both sold our products, we condoled with each other because of the low prices and hard times. I stopped that and came down to the soil and asked many questions. I asked first, why it was that I got only 15 bushels of wheat to the acre, while some of my neighbors got 35 bushels. I asked if it needed lime, nitrogen, potash, phosphoric acid, tiles or humus, and many other things. I did not want to appear wise, but I did want to make a profit on the crops I raised.

The study of the formation of the soil is very interesting and beautiful, as to how the heat and water struggled for mastery; how the numerous gases corroded the rocks and the water carried the particles to the lowest level when it was again thrown up by the heat. All this, I say, is very interesting, but we will pass on to the part that is to determine the matter of dollars and cents as pay for the labor we bestow on the soil.

The soil is composed of particles of rock, large or small, as the case may be, and the remains of animals and plants incorporated therein. It is hundreds of feet thick at places, while at others it is but a few inches. The soil, in a general way, acts as a great reservoir to hold water for our needs and future use. It acts as a great chemical laboratory in which to prepare plant food. It furnishes a congenial place

for plant root development to hold the plants upright and give them moisture and nourishment.

After a long, heavy rain we say the soil is full of water; then a brisk wind blows and the sun shines, and we say "it dries off." What do we mean by this? We know that in some way the water comes to the surface and the sun and air carry it away; we also know that some soils hold water a long time, while others dry off very rapidly. Let us see if we can learn how the soil holds water and how it can come up to the surface to be carried away by the atmosphere. A handful of marbles or a handful of smooth, waterworn pebbles taken from the stream, will answer. They being dry, you dip them into water and the surface will be wet; that is, the surface of each pebble will be coated with a thin film of water. If you take smaller pebbles, the surface will be increased and the handful will hold more water films. Take still smaller pebbles or sand, and the surface will be still greater and the quantity of water held, greater. By having a delicate scale you can weigh the water held by a half pint of pebbles, sand and fine soil. In the same way each particle of soil holds a film of water, and the more minute the soil particles, the greater is the water holding capacity of the soil. As a rule, however, when the particles of soil become extremely fine and are not divided by particles of vegetable matter, they mass together and the water holding capacity is reduced. A moderately fine soil will be capable of holding in the first five feet, from 12 to 20 inches of water; that is, if we could collect all the water in a foot square and five feet deep, the depth would be 12 to 20 inches, according to the fineness of the soil particles and their mechanical condition.

I said the particles are sometimes so small that they mass together, which is illustrated in our fields. The soil runs together and then bakes so hard that hardly anything can grow on it. How to remedy this is an important matter, and practically, I solved it in this way.

I first underdrained the soil carefully; then I worked to get a heavy clover sod on it; then I nursed it, petted, limed it, manured it, and grew cow peas on it and plowed them under, until it would take kindly to clover; then my victory was won, and this always turned out my best soil. Lime is often very beneficial on these running clay soils, as it cements the extremely minute particles together, and imparts quite another mechanical condition to the soil.

Let us consider the matter still further. I have shown you how the soil particles hold the water in thin films over the outside surface. Now, how does this water move or come up to the surface? We think it easy enough for water to go down, as that is the way we generally see water move, but when we are to believe that water will flow up hill we like to know the particulars. Let us take, for

example, the common coal oil lamp. If we put fire to the top of the wick, the oil in the font will at once begin to flow up and it will continue to flow that way until the oil is all consumed and the wick dry. It is the same way with the water in the soil. Let us suppose a column of soil particles is formed, like the wick, as a lamp wick is but a column of cotton particles or fibres one above the other, and instead of the fire on top of the wick we have the sun to draw up the water. As the sun dries up the films of water on the top particles, the films further down give up some of their water to replace that above in order to establish an equilibrium. In that way the water is set in motion to quite a depth in the soil and sub-soil. If everything is favorable, tons of water are carried off from each acre daily, at certain seasons of the year. Therefore, your whole corn or potato field acts like a huge lamp wick and the water contained in the soil flows in a steady current to the surface to replace that which is carried away by the sun's heat and the moving atmosphere. Our plants need this water. Can we prevent its escape?

You frequently noticed in the spring when the ground was well dried off, if you cleaned up where the straw stack stood, even when a board, wood, or rubbish pile was removed, the soil underneath was quite wet. This is plain, as the sun and air could not get at it to carry off the moisture. Now, of course, we can not cover the whole field with a wood or rubbish pile, though some farmers have enough rubbish around to cover one field; yet we can cover the field with loose, dry earth an inch, or two inches deep, which will answer the same purpose.

If we loosen up the earth an inch or so with a fine toothed implement, so that the whole surface is stirred and connection between the surface particles and those farther down, broken, the upward flow of water is arrested. To illustrate: Take the scissors and sever the wick in the coal oil lamp, except a few fibres, the oil will come up so slowly that the fire will only smoulder a while and finally go out. The moisture rises up to the air spaces in the dry loose soil and can not move further. There is no subject that should command more of our attention as farmers, than soil moisture. To grow a ton of dry matter often requires from 200 to 600 tons of water. Think of the water we are selling and the prices we get for it. I sold 100 quarts of strawberries yesterday, 90 quarts of which was water. Sell 100 barrels of apples and 85 barrels of water is sold. Sell 100 bushels of potatoes and you sell 80 bushels of water.

But this water in the soil, that is, these films of water surrounding the soil particles, do some other work for us. They remove from these soil particles, the mineral plant food needed by our plants. You are aware that the different spring and well waters hold in solution different minerals, sometimes enough to make it unpleasant to the



taste. The water in the limestone valley carries lime; in the magnetic iron ore region, sulphur and other minerals in solution. Nearly all spring water in our granite sections carries, among other ingredients, silica, a very hard substance that helps to build up our granite rocks. To show how water will dissolve substances, apparently very insoluble, a French scientist performed an experiment as follows: He placed water in a glass flask and kept it boiling for five days. When he weighed the flask he found that it had lost two grains in weight. You see the water could not get hold of the glass except on the inner smooth surface of the flask; but when the experimenter knocked off the neck of the flask and broke it into very small pieces and put it into the flask, filled it with water and boiled it five days more, when he weighed what was left, he found that the water had dissolved about one-fifth of the glass. Thus we see how the water in the soil may and does dissolve mineral plant food down in the subsoil, and by that upward flow of water, before explained, called capillarity, it will be brought up for our plants to use. The amount of mineral plant food thus dissolved has been proven to be quite large; but if heavy rains come it is carried down and that in the top soil is sometimes carried out of reach. This is one reason why we should at all times have a growing crop on all our soil to take up the plant food as it becomes available, and practice a wise rotation of crops.

We will now consider the plant for a few moments. This consideration is entirely from the standpoint of a practical farmer, as I never had the time nor opportunity to study Botany or Biology. When I say that plants are built up of cells, it may or may not convey the proper meaning; still let us look at the matter a little closer. Here is an orange, the fruit of a tree, as you all know. We will dissect it. After dividing it into sections, as we sometimes do in eating, we can, if we are careful, break the skin or covering of the section and we will see little sacks piled up against each other quite closely. If we separate these sacks we find that they are made up of an outside covering, membrane or skin, with a fluid on the inside. This sack is called a cell, the outside covering is called the cell wall, and the liquid on the inside is called the protoplasm.

Now, just as this orange is built up of cells, so all plants, trees, fruits, grasses and grains, in fact all vegetation, is built up of cells. Though very few have such large cells like the orange, and most of them are very minute, so small indeed, that we cannot see them unless we use a microscope, but on careful examination, we always find them. The roots, the plant system and leaves are all thus built up. In the hard stem, as in the tree, these cell walls become thick and rigid, and after they have served their purpose in conveying food, etc., they pack together very closely and form the wood of our trees and the stiff stems of our plants. All growth of plants is the building



of new cells. At the tip of the tiny rootlet or root hair, one new cell after another is added and the root reaches farther out and down in search of food. At the tip of the stem, cell upon cell is laid on and the head is lifted up higher to take advantage of the sunshine and air. The cell or a number of cells at the tip of the root hairs, come in close contact with the particles of soil, and if in need of water, will take of the films of water surrounding the soil particles and with it the needed plant food held in solution. The roots reach out after the water, but when the rootlet takes some water from the particles of soil next to it, the next particle will share with its neighbor and so on, and for a little distance a tiny current will set up and flow towards that rootlet. Roots feed at the tips or at the root hair. This should teach us to apply our plant food over the whole field, not in little drills, much less in hills. By that method we dwarf the root system instead of encouraging it to spread in search of the needed moisture and food. There may be an exception in very soluble plant food for a starter for the plant.

By this time you may ask, how does the water and plant food get into these cells? This question is certainly much easier asked than answered. The scientist says, it gets into the cells and passes from cell to cell by the force or process called *osmosis*. But calling it by its scientific name hardly makes the matter any plainer. We might make some experiments and see how it works. For example, we take some ripe dried beans and soak them for several hours in water; the water will penetrate the outside covering and the cell walls, and swell the bean until it is as large as it was when green on the plant. Or, let us reverse the process: Take ripe, sound fruit, as strawberries or currants, pick carefully and don't break the outside covering; place in a vessel and cover with sugar; let stand over night. What is the result? Quite an amount of fruit juice has oozed out through the cell walls and through the outside covering, moistened the sugar and dissolved it and some of the sweetened liquid has gone back again into the fruit, as you can readily learn by tasting it. This not only convinces me that there is such a process as *osmosis* and that plant cells can absorb and throw off liquid, but it also teaches me the fact that plant food, to be used by the plants, must be in solution, or liquid form. Solids cannot enter the cells and all food, that is all mineral food, is taken up by the root cells and carried up and translocated a number of times. Thus again, we see the absolute necessity of plenty of soil water and the reason for saving it whenever possible. There may be ever so much plant food close to the feeding roots, but if water is lacking, the plant cannot use the food.

How can we fit our soil to hold the largest possible quantity of soil water or capillary water? How can we manage to retain the largest possible per cent. of that water for plant use? These are

vital questions and must not be neglected. There are three great factors in making soils retentive of moisture, viz: Underdrainage, deep, thorough and complete cultivation, and a large amount of vegetable matter incorporated with the soil. Use the dry earth mulch in all intercultural crops, except, possibly, small fruit, where a straw, swale hay or chaff mulch may be preferable.

We will now take up the last part of the subject, viz, plant food. The plant is built up of a large number of ingredients, but as most of them are very plentiful everywhere, we need not worry about them. For example, all plants with green leaves must have iron to make the green color; but iron is plenty in all soils and we need not apply it to our crops; the same may be said of silica, sulphur, etc. But there are three ingredients that we purchase very largely to apply to our crops, and from this we infer that these three plant food ingredients are lacking. They are potash, phosphoric acid and nitrogen. That our soil holds an immense amount of these ingredients, is very sure, but then the users of commercial fertilizers are also very sure that it pays them to apply this plant food to their crop.

From a great many analyses of different soils in many localities from different States, some even in different countries, we may safely say that the average agricultural soil as deep as plants usually root and reach for their food, contains per acre from one to six tons of nitrogen, two to twelve tons of phosphoric acid, and from four to twenty-five or more tons of potash; enough to last, under ordinary cropping, for centuries. The nitrogen, as a rule, exists in the soil in much smaller quantities than either phosphoric acid or potash; and if we wish to purchase it from the fertilizer dealer, he will ask us more than twice as much for it per pound as either of the others.

But why buy it when we have right above our farms tons of it. The air we breathe is four-fifths nitrogen—the very same that costs us fifteen cents per pound. We can catch this nitrogen from the air and store it in the soil for future crops, if we only have a trap to do it with and use it properly. About ten years ago, Hellreigel with experiments proved, what was before suspected, that certain plants have the power to take free nitrogen from the air. He found that clover, peas, beans and plants of that order, by a very peculiar process took nitrogen from the surrounding atmosphere. A parasite of microscopic dimensions, lives on the roots of these plants and there breeds and multiplies in colonies. We can easily see the colonies on the roots of the plants in the shape of warts or excrescences. There these micro-organisms or bacteria, as they are called, take part of their subsistence from the host plant and the rest from the air in the soil. They are greedy consumers of nitrogen, and when these bacteria die the plant, in turn, eats them, so to speak. If we supply the clover plant with plenty of potash and phosphoric acid, it will gather

for us a wonderful supply of nitrogen, and at the same time produce a large mass of forage. The root growth being very deep and extensive, loosens up the soil so as to allow the air and water to penetrate it readily, and there decays, furnishing vegetable matter or humus to the soil, which, as before mentioned, increases its water-holding capacity. In some soils these bacteria do not exist or do not thrive and of course are not found on the roots.

The Remedy Necessary to Introduce It.—Stable manure is generally effective, though sometimes lime is needed to correct some unfavorable soil condition. If this will not do, take a little soil from a field where the bacteria is known to be present, and inoculate the other field by sowing a little of that soil over it. There is on the market now a substance called "nitragin," which will introduce the bacteria. Discoveries of the last few years show us that our soil, instead of being a dead, inert mass, is really teeming with life. Micro-organisms abound and do great work in preparing the plant food in the soil. If we sow ammonia in commercial fertilizers it is worked over and changed a number of times by bacteria before it can be used by the plant. When we plow under a heavy mass of sod and manure, a certain class of bacteria begin to work on the vegetable matter and break it down by the process called fermentation, and after many changes thus wrought can the next crop of plants use the plant food.

This wonderful process of bacterial work can only proceed efficiently in a well drained and well aerated soil. The oxygen of the air is absolutely necessary for the well being of these small organisms. Cultivation of the soil aids the work of these ferments and thereby furnishes plant food. In this sense, "tillage is truly manure." In an acid soil, these helpful ferments are retarded, and an application of lime, gypsum or salt may be very valuable as a corrective. Soils differ very widely, and what is good for one may be an injury to another. We must study individual soils, as well as soils in general. I hope I have called your attention to the greatness and importance of this subject. It does not, as a rule, receive the attention it should by practical farmers. We work too much and think too little.

I cannot close without calling attention to a few books treating on this subject in such a lucid and familiar manner that it can be fully comprehended by every intelligent farmer, and no one can study the subject without profiting thereby. I refer to "The Fertility of the Land," by Prof. Roberts, of Cornell University, and "The Soil," by Prof. King, of the Wisconsin University. (Applause.)

Chairman Hiester. The paper is now before the house for discussion.



## BARN YARD MANURE.

Mr. Stout. In connection with this, we have Professor Ravenel, of Philadelphia, who lectured before us last evening. I was thinking that we could find out, perhaps through him, at what degree of temperature the ammonia in manure escapes in the atmosphere. The reason I thought of asking him this, is to ascertain whether we are more likely to lose it in the summer time, or spring time, than in the winter time.

Dr. Ravenel. That is a question I cannot answer off-hand with absolute certainty. Ammonia is entirely dissolved by moisture. The loss of ammonia depends to a certain extent on the moisture we give to that which contains it. The higher the temperature the more loss of gaseous moisture. As an actual fact, ammonia is largely made up of a species of bacteria that I referred to last night. Under the treatment of our snows, which carry the ammonia down in them, the temperature of that soil can be raised to a considerable extent; and if there is any running manure in addition to that, the temperature of the soil can be made considerably higher than that of the air above. Under these circumstances ammonia can be made an important aid in various ways.

I think Prof. Armsby could give a better answer to that than I am able to do. While ammonia would be driven off under ordinary circumstances by the heat of fermentation; by sun heat, or artificial heat the organisms are more active, and also combine more readily with the elements of the soil, such as sodium, to give the nitrate of soda, and the nitrate of potash, in which condition it would be available for plant food. I think Professor Armsby has made some very extensive experiments at the State College on the temperature of soils, and no doubt can answer this question better than I can.

Chairman Hiester. Dr. Armsby.

Dr. Armsby. I failed to hear the original question. I don't know whether I can answer it or not.

Mr. Stout. My question is this, whether the custom of using liquid manure fresh from the stables, and hauling the manure right to the field, and spreading it immediately, is preferable to leaving it in the barn yard? The question is whether or not more of this manure will be available by this method? What are the probabilities of the loss of ammonia in the atmosphere? Or, at what degree of temperature does the manure give off this nitrogen and ammonia that escape from it?

Dr. Armsby. I do not think we have sufficient data to answer that question very definitely, because the conditions are so different and so complicated. It is a question of temperature at which these par-



ticular species of bacteria are most active. I should say, however, that the probabilities are in favor of the present practice of spreading the manure immediately upon the field, when practicable, rather than to allow it to stand in the barn or stable. Wherever you have a mass of manure under such conditions that the air can get at it, you have the most favorable conditions for the action of this bacteria, and for the fermentation which releases the ammonia—the fermentation particularly of the urea; while if you spread it immediately in the field, there is no opportunity for the heat in this connection to accumulate. So, in packing manure, or piling it, the temperature is likely to rise, and the bacteria take up increased action; while if it is spread off on the field, there is no such probability. So, by taking all things into consideration, although there is some loss in any case, I think the chances are in favor of the practice of spreading the manure as soon as possible after it is made.

Mr. Riddle. It is scarcely fair that so excellent a paper should pass without any comment. It is all right to listen to these scientific queries; but I want to commend this paper to the convention as being, in my judgment, one of the best that has been read so far, and it commends itself to the Board, on account of the honesty of the writer. It shows that he is an honest farmer. If he had not been, he would not have told how much water he sold in his product. I doubt whether any of these dairymen would be willing to make the same statement. (Laughter.)

The Chairman. I would judge that the writer is a dairyman, and he left that part out.

Mr. Piollet. I wish to ask Prof. Armsby whether it is necessary for this fermentation to take place in the barn yard manure before producing this bacteria?

Dr. Armsby. No, sir; it is necessary for the bacteria to produce the fermentation. The bacteria are the cause, and not the effect. It is not absolutely necessary that this fermentation should take place in order to make the nutrition of the manure available. One can use the soluble nutrition without previous fermentation; but it is much more readily available if converted into the form of ammonia and nitric acid by the action of these organisms.

Colonel Woodward. As I was preparing to leave my home for this meeting, I received a call from one of the most practical farmers of my county on a social visit. He walked with me to the station; and, after leaving my own farm, he said to me, "I wonder how it is that some of these fellows going around the State to the Institutes, and talking about the propriety of looking after our fertilizers, or the necessity of looking after them, forget to cover their own barn yard?" I am glad to hear the questions propounded by Mr. Stout, and the scientific questions answered by Dr. Armsby and others; and

I would be very glad to get these farmers to take care of fertilizers that leave our barn yards, and our other elements of fertility, and take up the reason for the loss if they are not carefully saved and spread upon our fields. I do not like to disagree with my friend, Mr. Stout—and I do not dare to in public at any rate—as to one of the causes of decreased fertility, as described by Dr. Ravenel last night, when these things are given in our charge; but we can listen and learn, and after it has been applied, know the results from our own products. I am really glad to hear the discussion on the scientific side of the question—we want very much more—of the practical application of the elements in our barnyards, and in our stables; and we need this more than we do to care whether or not the temperature is of a certain degree when it is applied to our fields.

Chairman Hiester. "Crimson Clover, and Its Place in Agriculture," by J. W. Allison, Esq., Mercer, Mercer county, Pa.

Mr. Allison. Mr. Chairman, Ladies and Gentlemen: I might say in opening, that over in Mercer county our soil is formed by glacial action. We have what is called there a clay soil, though I doubt whether it really is. It is not the clay soil that they have a little further west in Ohio—not so compact. I think there should be a better definition of this term "clay soil," and "sandy soil;"—we will call it a sandy loam—as found in our section of the State. I have raised crimson clover for six years, and the more I raise it, the more I esteem it, not as a crop particularly, but as a fertilizer especially, and that is what we are all wanting.

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## CRIMSON CLOVER AND ITS PLACE IN AGRICULTURE.

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By J. W. ALLISON, Mercer, Pa.

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Most farmers know and appreciate the common red clover as a forage crop, but very few even of the best farmers realize its full value as a fertilizer and soil renovator. Clover is the foundation on which we build in modern methods of farming, and a failure to secure a catch of seed, is a calamity, and the loss is as great as the failure of any other crop. As valuable as the common red clover is in farm rotation, so will crimson clover be when it becomes better known and its value better understood.

In comparing the value of the two clovers to the farmer, we should bear in mind the purpose for which they are needed. If for forage or hay, the common red clover is superior. If for fertility and the addition of humus to the soil, crimson clover has the advantage in, that it can be grown in the season of the year and on lands and with other crops where the red clover would be an entire failure. So each have their place, and when farmers come to realize the place of crimson clover, it will take its stand along with the other in the foundation on which we build our more intensive and successful farm operations.

Crimson clover is an annual, the same as its relations, the peas and beans, and like them, the seed must be sown each year to secure a crop. Like all the legumes, it gets its nitrogen from the air, and for this purpose it is equal to, if not superior, to any of the others. There is a point here that is not fully settled, and that is, does the time of the year in which the legumes make their growth, have any effect on their power of storing nitrogen from the atmosphere? We should remember that crimson clover is a cool weather plant. If sown in the spring when other clovers are sown, the heat and moisture of early summer causes such a rapid growth that it throws up its stalks and blossoms, when but a few inches high, and it is a failure. If sown at the proper time, so that it can have the cooler weather of fall and winter, its growth is all that can be desired. The best time to sow in this State is from the middle to the last of July.

Its value for pasture, poultry, calves, sheep and hogs, in late fall and early winter is great. For sheep it will follow rape and it is fully its equal for growth and fat. The same may be said of it for hog feed, more especially for brood sows and pigs. For early spring pasture it is excellent, remaining green and growing all winter whenever the ground is not frozen. It starts early and grows rapidly and in a short time gives good pasture. Its value as a hay crop is not equal to that of the common clover. The leaves being small, it appears, when cured for hay, to be all stems and blossoms, without any leaves. It is also very hard to cure for hay, but when properly cured it appears to be relished and eaten with avidity by all kinds of stock. But its chief value lies in its fertilizing qualities, and from the fact that it can be grown on lands that have produced the season's crop and are lying idle. All farmers are looking for a crop that can be grown in the fall to take up plant food and store it for future use, and as a cover crop for the soil during the winter. For this purpose, some follow the practice of sowing different grains, such as wheat, rye or oats.

There is no doubt, that for the purpose mentioned, crimson clover is far superior to any of the grains or to any other plant tried so far. It makes a larger growth in the same length of time than any of the



others, consequently will add more humus to the soil, besides, as was said before, being a nitrogenous crop and storing this necessary and costly plant food in the soil for future needs, and from its root system the plant food it stores, is mostly from the subsoil. Most of the other plants grown for the purposes mentioned, derive their food from the surface soil, but crimson clover, like the other clovers, sends its roots down in the subsoil and brings its plant food to the surface. Its root system is peculiar. It is a great plant to the tiller. From each seed there springs up from ten to forty stems and for each stem sent upward there appear to be a root striking downward, with numerous fibrous side roots, so much so, that where the seed is sown in time, against winter, the soil is full of roots. This will account for its rapid growth.

A few words might be said as to the method of seeding and lands to be seeded. The seed should always be harrowed in with some harrow or other tool that will cover the seed from one to two or three inches in depth. There is not much danger of getting the seed covered too deep. All lands that are to lie idle or bare during fall and winter should be seeded. A few of these might be mentioned, such as corn lands, early potatoes, buckwheat, etc. In case of corn lands, the seed should be sown previous to last working, buckwheat before seeding, and early potatoes as soon as potatoes are lifted and ground can be fitted after the middle of July. We should remember, if we wish it to stand the winter and live over for spring growth, it must be sown in time to get a good fall growth. If sown too early so that it blooms in the fall, of course, it is gone, but, like swing winter grain, we must use our best judgment about the time of seeding. In case of a failure to secure a catch of the common red clover in the spring seeding, and the dependence is on that seeding for the next years' hay crop, it will pay to fit the ground and sow to crimson clover as a substitute. In doing so the field could again be brought into rotation by plowing after the crop is removed and again sow to wheat, or planted to potatoes or corn. As a honey plant, it is even superior to the white clover, coming after the apple blossoms have fallen and before the white clover blossoms and while the brood chambers are full of brood, requiring a large amount of honey for the rearing, it fills up a gap that will be appreciated by all apiculturists.

As to raising seed from it for a money crop, it will pay largely at present prices. The average amount grown per acre is from seven to eight bushels, which, sold at \$3.00 per bushel, pays better than wheat at 75 cents, besides leaving the ground in best of condition for succeeding crops. There are many advantages in crop rotation when this clover comes into general use that can be utilized as they occur, but, as was said before, its place in farm operations is as a soil renovator, and for this purpose, and this alone, it will pay every



farmer to use it and use it largely, saving fertilizer bills, while adding to the fertility of the soil, it will take its place in farm rotation and be as highly valued as the common red clover.

The Chairman. As the next paper will be on practically the same subject, I think we had better defer remarks or discussion until after we have that read. I would therefore call on Mr. R. S. Seeds, of Birmingham, Huntingdon county, to read his paper on "The Value of Fertility, and a Cheap Way to Get It."

Mr. Seeds read his paper as follows:

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## THE VALUE OF FERTILITY AND A CHEAP WAY TO GET IT.

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By R. S. SEEDS. *Birmingham, Pa.*

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This is the paramount question of the husbandman, and the cornerstone of agriculture. It is the propelling power of the farm and the purchasing power of the farmer. A farm without fertility is like a ship without a rudder, like an engine without steam. If a farmer wants to educate his children, dress his wife and daughters, as a farmer's wife and daughters should be dressed, beautify his home and make it like a farmers' home ought to be, and if he wants to lift the mortgage on his farm, he must have fertility. I can take you to a county in this State, and in the one end of the county, I can show you intelligent people. Along the public road stands graded school houses, clover fields in full bloom covered with the morning dew and sparkling like millions of diamonds when kissed by the morning sun. I can show you well dressed people living in good and comfortable homes, buildings in good repair and well painted. I can show you that everything has an air of prosperity and thrift. In the other end of the county I can show you the old red school house with ten-plate stove that burned wood for ages, children gaze and gape at strangers, bricks are falling from the tops of chimneys, gates going without hinges and old hats are stuffed in broken window panes, women going slipshod, and tobacco juice drawing the map of the devil's wild land on men's shirt bosoms and covering their chins with hieroglyphics like a Chinese prescription written up-side-down for the chills. The land is so poor that when the men want to dress up,

the best thing they can do is to put on a paper collar and smoke a cigar.

This comparison may seem a little strong, but I can prove to you by the expression on the children's faces that the land is poor, just as easy as I can take you to Carlisle, and prove to you by the expression on the Indian's face that that is an institute of learning. There is no other reason for this contrast, except fertility, and the want of it, hence its value. Secure fertility and mix with it a little business, and other things shall be added.

#### THE CHEAPEST WAY TO GET IT.

Securing fertility is easy if you have the money, and want to get it that way, but the cheapest way is the great problem of the farmer. Take a farm, as I did seven years ago, that was so poor that it was abandoned and a man could not be found that would farm it, this is what makes a man scratch his head and sharpen his lead pencil. The Almighty never made the fertility of the soil available in any other way, except with vegetable matter. The prairie of the west and the virgin soil of the forest were made fertile in this way.

Why not use more vegetable matter when it is the cheapest and most natural way of improving the soil? I have improved the mechanical condition of my soil; the texture has been improved, increasing the water-holding power. I have made it darker in color, lighter in weight, and warmer in cold weather. This I have done with vegetable matter at a cost of from 80 cents to \$1.00 an acre, and when I raised crimson clover that would cut two tons of hay to the acre (and I raised more than that), I learn from the best authority that the fertility in it was worth \$19.50, and they say the roots are worth as much as the tops; if so, I have \$39.00 worth of fertility to the acre. How is this for eight cents per acre for a catch crop in corn. I would sow this in my corn the last time I worked it, and plow it down the next May or June for wheat, always buying my crimson clover seed as far north as possible. My farm is covered with grass now, and I want to use my cornstalks for oats. So I am going to raise crimson clover and the long cowhorn turnip (that I get in Illinois), together in my corn this year to plow down late in the fall, for oats in the spring, and I expect to get the cost of this vegetable matter below eighty cents per acre. I tried this experiment last year through the centre of my cornfield with satisfactory results, using the common flat turnip seed. This is the cheapest way I have discovered to bring up wornout land.

Analyses taken from the "Rural New Yorker," says, that "A sample of soil taken from a field where three crops of crimson clover had been plowed down, and compared with a sample of soil from another field four rods away, where no crimson clover had been raised, showed

that the crimson clover plot contained nearly 47 tons more water per acre, had 1,350 pounds more nitrogen, 105 pounds more phosphoric acid, and considerable more potash." This shows the value of vegetable matter as a fertilizer. The chemist went over his work three times.

I know that turnips will not make a showing like this; but I am encouraged from what my farmer told me the other day. I was telling him that the long, cowhorn turnip seed had come and what I was going to do. He said, "I believe you are right, for when I lived at Mr. Gensimere's ( a great turnip raiser), we would cut the tops of the turnips in small piles in the corn field and you could see in the oats and wheat where we had plowed down the turnip tops."

H. W. Collingwood, editor of the "Rural New Yorker," at the New Jersey Institute, said: "I used to say I would not take stable manure as a gift; now I will take all I can get," and told how he grew cow peas and crimson clover to get humus, and had samples of crimson clover with him. This is not only true in regards to getting fertility, but I think Mr. Collingwood will say that it is the cheapest way.

The next cheapest way of getting fertility, is in saving and taking care of the barn yard manure, and systematically and intelligently applying it to the land. If these materials are carefully returned to the land and vegetable matter raised for green manurial crops at eighty cents per acre, the purchase of commercial fertilizer will be an unknown thing. It is surprising to learn that the annual loss of manure of each farm is \$83.33; hence how important to haul the manure out as it is made and let it get to work as soon as possible, always spreading it off the wagon. Do not keep a dung hook on the farm. They are daylight robbers. Always put the manure on the grass and as far ahead of plowing as possible.

I have manured about one-third of a mowing field in the latter part of the winter, and in March and April, then mowed the field in June, and would manure the balance of the field in the fall and winter and put the field in corn the next spring, and after the corn and fodder were in the barn I have taken my man to the edge of the field and showed him by the stalks that we had more fertility and better corn where we manured and mowed the field than where we manured after the mowing. And when we were hauling hay to the barn, produced by the manure made in the winter, March and April, my neighbor was hauling manure made at the same time on his bare corn-stalks, pulling it off the wagon with that famous dung hook, and there it lay until he went to plow, when he spread it around in dry chunks, the size of my head. About the same time we were plowing down crimson clover on the same kind of a field at eighty cents per acre. This is one way I figure the cost of fertility. Fresh manure on grass is the best place to have it in a dry season or any other season; fresh

manure plowed down during a dry season may produce little effect; in fact it has a forcing effect and tends to produce stems and leaves at the expense of the grain. It is, therefore, better for grasses than cereals.

Well rotted and decomposed manure is better for growing potatoes and some other crops, if directly applied, but leaving it lay until well rotted, it has lost as much as thirty per cent. of its nitrogen in twelve months. So, I claim that barn yard manure handled in a business-like manner and vegetable matter plowed down, is cheaper than the commercial fertilizer bag or limekiln. Under this treatment you can see the ground fill up with humus, the mechanical conditions improve, the soil becomes lighter, darker and warmer, easier worked, and withstanding a drought better.

This is the cheapest way known among men, and in trying to tell you in my humble way about it, I hope you will excuse the use of the personal pronoun I, for my own experience is the only thing I have to offer. (Hearty applause.)

Mr. Riddle. I feel like taking this opportunity to repudiate that part of this paper which refers to the county I represent. So far as the fine description is concerned, I know you will not for some time listen to anything superior. But that is not what I rise to refer to—it is the statement that we are so advanced that we have in Congress a man who sets the fashion to the world of putting up his washing in the front yard.

The Chairman. Gentlemen, these two papers are before you.

#### CRIMSON CLOVER SEED DISCUSSION.

Mr. Stout. I wish to ask in regard to the fertility of this clover seed, whether it is good longer than a year?

The Chairman. Mr. Allison, will you answer that question?

Mr. Allison. In the year 1893, I raised crimson clover seed for the first time. I sowed the seed in 1897, and its vitality was good. I sowed the seed in 1898, and still have seed for my own sowing for the present year.

Mr. Riddle. How much seed did you use to the acre?

Mr. Allison. One peck. It is as good as one peck of the other kinds, and the seed is three times as large.

Mr. Riddle. I did not quite understand. How much seed did you use to the acre?

Mr. Allison. One peck to the acre; fifteen pounds.

Mr. Riddle. Would it be too late to prepare ground that a crop of wheat had been taken off, say, this season, in the middle of July—to use this same ground for crimson clover?

Mr. Allison. Decidedly not. Crimson clover could be put in at any time before the first of August.



Mr. Hutchison. Is it a fact that you get a crop only once in three years?

Mr. Allison. I sowed in the middle of August, because heretofore it had been a failure. I sowed on the top of the the ground, and used other clover, and it was a failure. Since that I have been sowing earlier, about the middle to the latter part of July, and I have never had a failure by sowing about that time. This last winter was considered a very hard winter on crimson clover, but the crop was good. The last of it I plowed down last week, and put it in potatoes.

Mr. Riddle. What would be the best way of preparing the ground that had on wheat stubble?

Mr. Allison. The ordinary method. Plow, roll and prepare thoroughly for the clover; and then sow, and harrow with a spring tooth plow. There is no danger of the seed rotting during that time of the year. The ground is warm. Sowing after corn, a few days after the seed was sown, I saw it where the most corn had been.

Colonel Woodward. Would the harrow plow take the place of the regular plow?

Mr. Allison. I believe I would prefer the plow.

Mr. Stout. In sowing it with corn, before cultivating or afterwards?

Mr. Allison. Before cultivating. I tried to cultivate our corn too deep the last time, about two inches; and then sowed before cultivating.

Mr. Brown (York). That is the question I was about to ask Mr. Allison. I wished to know whether he found the best practice to sow before the cultivating, after he had begun cultivating, or after the last cultivation of the corn. I ask this because I had a little experience, that was of some value, both before and after the cultivating, and I found that I had the best clover where I had cultivated it, i. e., where it stood the thickest.

Our farmers in York county have been raising crimson clover for the last six or seven years. In the lower part of our county, and over in Maryland, it became a great fad to replace the grass by crimson clover sown there; and some of the farmers have been meeting with success, and are very enthusiastic over it; and some others have been uniformly unsuccessful. And so it has created a great deal of doubt as to the reliability of the yield of that they appreciate so highly. A number of our people have been driven out of the sowing of crimson clover seed, because of such lack of success. If there is any method by which we can be assured of a given amount of crimson clover, or so that we can be reasonably assured of a good stand of crimson clover, I think it would be an inestimable boon to our people.

Mr. Thomas. I am glad of those who believe that the solution of

this will be a great boon in the restoration to fertility to the worn-out soils of Pennsylvania. I am one of those who are impressed with the fact that the procuring of the largest amount of humus in the soil is the cheapest solution, and I might say, the only solution. But I have had but little experience, not as much as I should have had, in the use of crimson clover in this way. After listening to my very good friend, Mr. Cooper, some years ago, at a meeting of this Board, I determined to try, on the suggestions that he advanced, the use of crimson clover for this purpose. Now, I will give you the result—and I think it may be worth something to the farmers present. He advised using it as a catch crop. I sowed a part of a field of corn in crimson clover, at the last working, as he directed—about four acres of a seven-acre field. I had a fine stand of crimson clover. I remember at a meeting, when the Secretary of the Board of Agriculture attended the meeting, in an institute of Cambria county, telling him what a splendid crop of crimson clover I had. That, I think, was in January. It stood over the field that high (indicating a little over two feet). It looked like a clover field before harvest, or late in the fall; and I expected to have a crop of clover there the next spring. Now, it did not come out in head; but the severe weather that we experienced in Cambria county during February and March, of freezing and thawing, destroyed that crop.

We were discouraged about the raising of crimson clover; and we sowed a part of it in wheat for the next summer. The crimson topped roots were laying all over the field, all lifted out; and we sowed that part in wheat. The other part of the field we sowed in oats. Both we sowed in clover. Now, you could not notice, after the wheat and oats were taken off, any of this at all. The clover seed at the time was sown as well on the oats ground as where the wheat was sown, and where the crimson clover had been. Brother Seeds said that he would like you to see the field that he has. I wish you could see that field of mine to-day. It has been in grass and uncultivated, lying out for two years. Where the crimson clover grew, there is as fine a meadow as I want to see, or as we seldom see in Cambria county. The clover is fine, with timothy; and this would be the third sowing of the crimson clover and timothy together. Just above where the timothy was not sown, there we have no sign of clover. As a rule the clover only remains in our ground about one year, and then it is replaced by something else. But here we have in three sowings the clover peculiarly good, sowed with the timothy in that way. I feel that we were abundantly repaid for the cost of sowing that crimson clover. Mr. Cooper believes that like experiments will be attended with like results, and I have great confidence in Mr. Cooper, because what he has stated in this regard has invariably proven to be correct.

Now, another thing in crimson clover that I feel I ought to tell.. I

believe that the large amount of humus was improved. I prepared a piece of ground in the spring at the time of sowing oats. I sowed that comparatively well, just as well as I would have with oats alone; I sowed it in crimson clover, with an admixture of about a peck of oats. About the last of June or the first of July, we had an enormous crop of oats and crimson clover, the crimson clover growing to its highest after we took off the oats. The oats did well; it protected the crimson clover from the effects of the hot sun during June. Now, by the middle of June it began to be almost fit to plow down, and we plowed it down about the last of the month, and then sowed it in buckwheat immediately. We had a very large crop of buckwheat on that soil. In the fall, in September, we plowed that crop of buckwheat down and sowed it in rye, with the use of a small amount of fertilizer, South Carolina rock, I think, and the next spring, in June, my son went in to plow that lot. When he went in he commenced in the middle of the piece, so as to throw it inside, and not towards the fence, which is, I think, a pretty good method. When he got in the middle of that field, I could not see him with my team, the rye stood so high in the middle of the land. By the use of the team we plowed that rye down. We have that piece of ground brought from a condition of poor land to a condition of fertility that is very good indeed. I would give a good deal if the balance of the farm was as good as it; simply without the expenditure of hardly any fertilizer at all, excepting that of the several crops and the labor we expended upon it. Now, I attribute this to the use of crimson clover.

Mr. Hutchison. There are two subjects here in one; but they all seem to be driving on the question of crimson clover. Now, the other is "The Value of Fertility, and a Cheap Way to Get It," Mr. Seed's subject. That is the subject that is interesting me; and in speaking on this question we have to refer to our own experience largely. I have a farm. A portion of the land that I secured was very poor, and I started in to build up that land, and to make it productive; but I didn't follow the system that is laid down by our friend, Mr. Seeds. I live in the same township that he does; but the county of which he gave this description is not our county; it is Centre county. (Laughter.) Professor Hamilton lives on the side where the sheriff lives; Mr. Woodward lives on the other side of the mountain. (Renewed laughter.) We know that wherever this land is stirred up enough, there is a certain amount of phosphoric acid, and large quantities of potash and plant food; and we wish to develop these, and make them available. Where this land is very poor, without any encouraging features, we realize that we get a crop of crimson clover about once in three years.

A Voice. Indeed.



Mr. Hutchison. That has been the history of those who have been growing it. Going up and down the railroad, I only see one crop of crimson clover along the line, and that is on the land of Dr. Rothrock.

Dr. Rothrock. For the last four years there has been a crop on the same ground.

Mr. Hutchison. I could not grow it to that extent; and we have to grow the other clover. A renter goes upon this farm, and we proceed to build it up. We must take some other means. I put on the first year, towards bringing it up, 150 bushels of good lime to the acre.

A Voice. No wonder it is poor.

Mr. Hutchison. Now, that is all right. I followed that with 250 pounds of phosphate, then with red clover, and it helps the Pennsylvania farmer. Under that system we carried on the farming, and now that farm is producing in the neighborhood of from one and one-half to two tons of hay to the acre, 150 bushels of potatoes, and doing as well in corn and oats, while our wheat averaged 28 bushels to the acre.

I have nothing to suggest in the way of theory to this Institute; but that has been my experience. I never could have built up that land with crimson clover. I could not have waited three or four years to get a crop, like some others do; but I went ahead and limed that farm. There are a number of gentlemen here who have visited me, and they all know that I am raising these crops. There are 20 men in this room who can speak from personal observation as to the truth of this statement.

We have a shed in our barn yard 28 by 90 feet, and we keep all the manure that is produced under that shed. We do not apply that manure in the winter when the ground is frozen, and when it is like this floor, or when the substance will flow off into the stream; but we wait until the proper time, and apply it when we can get the best benefits for our bank account from what is stored there. With this system I have been able to build up the farm, and make it as productive a farm as there is in the township. This has been the system. You may say it is too expensive. We have the lime stone on the farm, and it is not so expensive as some may suppose. I know it is the disposition of the crimson clover people to go around and tell the farmers that this is the salvation of the farmer. In my experience it has not been successful, except in a few instances, and one instance is that of Mr. Seeds; and I think in that case it must have been followed up with something to get the crimson clover to grow.

Mr. Kahler. The farmers up in our county of Lycoming have not made much of a success with crimson clover. For my part, I have had very good results, when I could get a catch; but like my friend



who has just left the floor, I have about made up my mind that I can get as good results with less trouble, probably, out of the common red clover. Now, we are all ready to admit that we can get good results with that; and I have been as successful in getting a catch with that as I have with the crimson clover. I have noticed all through our county, where you see one catch, you see four that miss. I do not believe, with my experience, that it is as good as the red clover.

Mr. Allison. What do you mean by a "catch?"

Mr. Kahler. When we get the seed to grow. It is an annual, and if we miss it, we haven't got anything.

#### EXPERIMENTS WITH CRIMSON CLOVER.

Mr. Allison. I think the trouble is in the seed not being good. Now, I want to relate a little experiment I made. I do not pretend that the crimson clover is everything. The seed was sown, probably, the last or the middle of July. The first of November I took my square along, and took up a foot of the crimson clover; at another place where I thought it was just an average of the field I took up another foot; and where I found it was the best, I took up another; thus having a foot of the poorest, a foot of the average, and a foot of the best. I took it all out carefully, taking all the roots along with me. Then I dried it out. The first, where it was the poorest, we had seven ounces and a fraction; where it was the best, it weighed one pound, seven ounces and a fraction; where it was the average, it weighed one pound. That, while my land was lying idle and doing nothing. And there I got, when fresh, ten pounds as the poorest, with an average of twenty-one pounds, and the best thirty pounds, just during the fall growth.

Mr. Brown (of York). Have you had any experience in raising crimson clover on heavy clay land?

Mr. Allison. We would like to have an explanation of what heavy clay land is? We haven't any in Mercer county.

Prof. Heiges. Brick clay.

Mr. Hutchison. Or lime stone?

Mr. Allison. I have never had any experience with clay land.

Mr. Seeds. In regard to crimson clover catching, the year I went to Centre county, seven years ago, to hear Mr. Cooper talk on crimson clover, I was very much interested. From an agricultural paper I learned that if the seed had been raised in my section it would not do in my climate; so I made up my mind to buy the seed as far north as possible, and I have never lost a crop. My neighbor, Mr. Hutchison, has a farm low down the ridge, and is protected from the north wind, with lime stone, and flint on a part of his land; but it seems he cannot succeed in raising a good crop successfully every time; while some of my other neighbors have done well. I have sowed it

in the spring of the year, and plowed it down in the fall; and the reason I have had a good crop is because, I think, I bought the seed in Cleveland; and I think the others have bought too far south. I have never lost a crop of crimson clover.

Dr. Rothrock. I have grown crimson clover for five years, and something over 200 acres of it. The first crop was on lime stone soil, so-called. It was not a very great success, but it was my own fault. Every year since that I have had a good crop of crimson clover. This is the only point I wanted to make here—I wanted to say that I had for four successive years a good crop of crimson clover. In order to develop it, I have allowed the growth of one year to stand from year to year, and that has paid me more than all. Now, gentlemen, I am going to devote the remainder of the land I have got there, of the 150 acres on that farm, to the production of crimson clover, and turn that into seed. You cannot buy a pound of that seed; I am not trying to advertise it. Every pound of crimson clover I can raise on that farm is engaged a year before hand, and sold in New York.

#### POINTS ON CRIMSON CLOVER.

Prof. Hamilton. I just want to say one word, to get out the points, as I understand, of the whole discussion. I think it is agreed on all sides that if crimson clover can be grown, if it is a sure crop, if there is some way by which we may certainly know that it is going to catch, it is one of the most valuable crops that we have in our climate. And if I understand this speech that has been made in the advocacy of this one item in our agriculture, it is to show that it is possible to have a crop of crimson clover on almost any proper soil every year; and that the only two things necessary are, that you shall have good seed, and that you shall plant it deep.

Mr. Piollet. Mr. Chairman: I did not expect to say anything on this question; but I am interested in the fertilization of our soils, as all are; and I believe it depends on the amount of humus in the soil, and the amount of plant food. Now, we are trying to get them; and it is tried to be demonstrated here that we are sure to have that with crimson clover. I have experimented with it several years; succeeded once or twice, and have failed a majority of the time. Last August, the forepart, I think about the 10th, I started to harvest a crop of tobacco. As fast as the tobacco was taken from that field the ground was replowed, rolled and harrowed, and the crimson clover seed put in at the rate of one and one-half pecks per acre. I went over with the drill, bearing down very hard, and stirred it into the soil. There were 20 acres in that piece. The first seven acres came up and lived. The other part, which was sowed, the last of it, on the seventh of September, came up, and had the leaves formed, but the dry weather that followed completely killed it, and all of that portion of the field

was left comparatively bare, while the other part was covered. Now, the crimson clover was not a success there. The year before we waited until we harvested the crop, and sowed a whole field. It came up and looked as elegant as the one Brother Seeds spoke about a while ago. It looked fine in the fall; but in the spring nothing was there; it was all winter killed. I believe if we are to depend upon crimson clover alone for this humus, that we will get left. I believe the true plan is to furnish the fertilizer through stock. I believe in the growing of sheep, and taking off whatever you can spare. Feed and sell your coarse products of the field, and the riff-raff apply to the soil. To keep up a farm, you have to keep cows, and other stock which are a benefit, by furnishing manure.

Mr. Moore. By sowing and keeping the seed of red clover, it does not cost more, and I can get double in the field that I can of crimson clover.

Mr. Beardslee. It appears that some gentlemen engaged in this discussion have been extremely favored in the way of being located in a climate where you can successfully produce crimson clover. You gentlemen are located in the grandest parts of the Commonwealth; down in your valleys, and not on the mountains. I am still farther north than Mr. Piollet. I know of no one in our county who has been successful in raising crimson clover; but from the drift of the suggestions and talk, I find the only need to your success is in being very thorough in the work of preparing the soil, and then having good seed and going down deep. Then you have accomplished a great deal. I believe if this crimson clover can be grown anywhere in our climate, that we can produce it and be very successful, and have an excellent fertilizing element; for the very reason that it is a crop, if it can be grown well, you are sure of a crop, which, from the beginning, will add to the fertility that no other crop will make.

Dr. Rothrock. I have said I have had four years' experience. I scattered it on the top of the ground. As far as the climate is concerned, I own a farm in the highest part of the State of Pennsylvania, on the summit of Sullivan county, where there is a good crop of crimson clover growing. It is at an elevation of 2,000 feet, near Lake Ganoga.

Mr. Giffen. I wish to say, in answer to the first gentleman from Bradford county, that the speech he made, I gave him this morning. I cannot understand how farmers can expect to make money by the old system. It seems to me there is a new system springing up by which we can replace the rotation of crops, and produce everything on the land itself. Now you are growing everything off the land, and the middle man reaping the profits. Therefore I would say this, and I might use an illustration in this way: By the past system of



farming, you are really carting all these natural fertilizers away. That is, yesterday you hauled the best part of your land away; to-day you are carting it back at a great expense, in the way of lime, phosphates, and other fertilizers. Now, then, feed that which you raise into the stock, and the growth of the stock itself will give you all the profit, if not more than all, you received from those crops by hauling them away. Besides that, you add to the soil exactly the elements of which that soil has been robbed, and yet in a greater quantity. Therefore the farmer does not need to be so much of a chemist or botanist, as he does to give this subject care and attention.

Mr. Cooper. Mr. Chairman: A few minutes ago I understood Mr. Allison to say that after he had sowed the buckwheat, or a week or two after, he had sowed the crimson clover. I want to ask him whether he had success with the crimson clover?

Mr. Allison. Mr. Chairman: It was a neighbor that got the seed from me, and sowed the buckwheat. About the first of July he came to my place and got the seed, and sowed it about the middle of the month. I told him I was afraid it would be a failure. He tried it anyhow, and had a perfect success. I suppose the ground being shaded and moist, that it took hold and the seed produced a good crop.

Mr. Cooper. It is a bad policy, I want to say, after ten year's experience, to sow the seed without being covered. Necessarily, the way Mr. Piolet prepared the land of the tobacco patch, I think it was fatal to success. If he had plowed his ground and harrowed in his clover seed, he would most likely have had an admirable stand, especially if the tobacco had been followed with a good dressing of manure. To the gentleman from York county (Mr. Brown), I want to say that it is possible to get a stand after plowing the ground, by immediately dragging the surface with a disk or cultivating harrow, and harrowing in with a speared tooth harrow.

To another gentleman (Mr. Thomas), who has said it was not a success, because it was winter killed, I would say, that I know from actual observation and careful examination, that if the plant will live and get about four or five inches high by the last of November, that you will have a crop that will double and treble, ten times over the value or cost of the seed. I made the same examination that one of the gentlemen did, who spoke of taking the average of the plants, and found a foot deep the little nodules, the last being in November, proving to me conclusively that it pays, although it was not put in until during the month of August. (Applause.)

Mr. Brown. Do I understand you to say that if the cultivating harrow had been used, it would have been better?

Mr. Cooper. There is no doubt about that.

Mr. Brown. We have had experience in that line for fifteen years. It is a common custom to follow tobacco with wheat; and it is now



the universal experience to not put the wheat in when the tobacco stalk is green. They cultivate and put the wheat in.

Mr. Piollet. What do you do with the sprouts?

Mr. Brown. Some leave them in, and some pull them out with an appliance for that purpose.

Mr. Cooper. Mr. Piollet plowed the ground, opening spaces, through which the moisture evaporated.

Mr. Piollet. The sprouts would have to be plowed under.

#### NEW PLANT DESTROYING INSECTS.

Chairman Hiester. Dr. Fernald has made a discovery in the town of a shell louse on a plant or tree. He wishes to draw your attention to this particular insect; and we will give him two minutes to make the statement.

Dr. Fernald. Mr. Chairman, Ladies and Gentlemen: I would like to call your attention to the insects along this twig (exhibiting), and also a little more carefully to this one (exhibiting another), for the reason that a great many inquiries have been received on the subject. The usual inquiry is, what makes this wart? It is not a wart, or plant growth at all; it is a true insect. It is a large, reddish brown hump; and I will pass it around, that you may see what it is like. I find at the present time, as well as the greater part of the past winter, that the insects that are under the scale are apparently dead; but if I take one of these scales off, and rub the material next to it, it is a fine dust. There are probably 1,000 to 5,000 eggs under these scales. Sometime this spring these will hatch, and the insects will crawl over the tree, and each one will stick its bill in, and begin to suck the juice. You can determine by that how long that tree will live after treatment in this way.

As to treatment, just a word: While the insects are under the scale, and in the egg stage, there is nothing to be done. At the present moment the plant is in perfect health. At the moment this hatching takes place, and the young begin to feed, then that plant is doomed, unless something is done. Then use the ordinary kerosene emulsion, made in the ordinary manner.

There is a smaller scale than this, about the same height—a small, roundish scale, which Prof. Heiges has just handed me. It has overwhelmed the plums of Lancaster county the present season. I have seen some plums of Lancaster county within a week, the underside of which were covered with scales, and parts of the tree so thickly covered that you cannot see the bark. The trees are doomed, unless you can get something for them. Therefore, I call attention to this as really a different kind of scale. The plan is to watch for the young, and to kill with kerosene emulsion as soon as the young appear.

A Member. When is that likely to be?

Dr. Fernald. I cannot tell you, because different species appear

at different times. When they hatch they begin to suck the juice out from the inside of the bark, and then is the time to use the spray.

A Member. Is the same remedy good for both scales?

Dr. Fernald. This is good for the Oyster Scale, but not for the San José, which you will have to spray with kerosene emulsion every four or five days from spring until frost.

Chairman Hiester. "Soil Cultivation and Soil Moisture," by Dr. William Frear, Chemist, Pennsylvania State Experiment Station, State College, Pa.

(No response.)

Chairman Hiester. "Why Farmers Should Know the Constituents of Feed," O. W. Stoughton, Esq., Evans City, Butler county, Pa.

Mr. Stoughton. Mr. Chairman, Ladies and Gentlemen: When Prof. Hamilton asked me to take up the subject, I said I would; but at that time I made a change in my business, and in the hurry of moving, there were many important matters which should be considered upon this subject, which I omitted. I thought to-day, with the other discussions on hand, that they would crowd me out. But I will give you my experience, largely on dairying.

## WHY FARMERS SHOULD KNOW THE CONSTITUENTS OF FEED.

By O. W. STOUGHTON, *Evans City, Pa.*

In the consideration of this subject I will have to state what brought it to my notice. In my earlier experience of farm life I learned to consider the cost of production. One winter I fed my cows for the production of butter, timothy hay and corn chop. The best I could do with Jersey cows was one-half pound of butter per day, which brought 24 cents per pound in market, giving me 12 cents per head per day. In counting up my feed I found it cost me 9 cents per day to keep my cow, leaving me 3 cents net profit. To say I was discouraged, is putting it in its mildest form. I was almost driven to desperation. I chanced to find a copy of Hoard's Dairyman, which told me that I needed protein to make my cows give more milk and butter. I did not know what protein was, much less how to secure it. I subscribed to Hoard's Dairyman, and every week was told to feed protein. I

was ashamed to confess my ignorance and ask Editor Hoard to explain himself, but waited. Finally a copy of Hoard's Dairyman told me the composition of feed, which were water, ash, protein, carbohydrates and fat. I learned that we need not consider the water in the feed so much, as we did not feed our food for the water it contained. I learned that ash, or mineral matter, served to keep up the mineral part of the body and that most feed contained enough of this matter. I learned that protein was that part of the feed which builds up the working tissues of the body. It may be the growth of the animal, the growth of wool or hair or the production of milk. Fat and carbohydrates were considered together. They were to furnish the animal with heat and force, and if there is more than is needed for the above it is laid on in fat.

About this time I received a Bulletin from the Department of Agriculture which gave the composition of my animal. I found that the animal contained water, ash, protein and fat. Now, my eyes began to open. I found that if I wanted to produce milk I must raise the protein in my feed. I did so. I balanced my ration to about  $2\frac{1}{2}$  pounds digestible protein to about 15 pounds digestible carbohydrates and fat for a cow weighing 1,000 pounds. That winter I raised the production of butter to an average of one pound per day, per cow, old and young. This butter I sold at 24 cents per pound, and my feed cost me 10 cents per day, per head, giving me a net profit of 12 cents per head, per day, or 9 cents per head, per day, over my first experience. Now, I began to take heart, and visions of wealth flitted before my eyes. I attribute this increased production to the raising of protein in my feed. I find in feeding brood sows, if I keep the protein well up in their feed that they never turn cannibals and devour their young, but when they were kept on dishwater and corn, that they almost always ate the small pigs. Some say to feed the sow fat meat, that it will stop the habit, but it will not. Feed them protein and I will assure you no trouble.

In feeding young heifers which are to drop their first calf, if I feed a nitrogenous food and keep the protein well up, I never have any trouble; but, on the other hand, if I feed the carbonaceous foods, I generally get a weak calf, and the mother, as a rule, is also weak. Sometimes she will act as though she is crazy and try to destroy the young calf. Now, if I keep the protein well up, I never have any trouble. My neighbor came to me this spring in trouble. His ewes were dying. They would walk around in a circle and drop over dead.

The symptoms were that of "grub in the head." I am no horse doctor, but I told him to examine the head of the dead sheep. He did so and could find nothing wrong. I was greatly perplexed. I finally asked him what he fed? His answer was, nothing but corn ensilage. I told him that his sheep were dying for lack of protein in

their feed. Plenty of feed before them and yet they were starving to death. Those ewes having to draw from the protein of their bodies to grow the foetus, simply exhausted the protein of their bodies until death claimed them. A lot of wethers fed on timothy hay and shelled corn, were very light clippers, owing to a lack of protein in their feed. Another loss of money by not knowing how to feed. I recall a lot of small pigs that were allowed to feed with fattening hogs. They became very fat. They were fed through the winter and at seven months old, when sold, only averaged one hundred pounds each, ruined by improper feeding when young.

I will cite one other case and then quit. I could go on for an hour or more, but it would only weary the patience of this audience. My neighbor always bought a pair of pigs in the fall, put them in the pen and fed them largely on corn. The result was that their legs gave way—a small hog, dressing about two hundred pounds at one year old; another loss of money by not knowing how to feed. Had he sold the corn that he fed those hogs he could have bought more dressed meat at killing time. Every well developed pig, if fed the proper amount of protein, its limbs will always carry its own weight, whether fed on plank or ground floor. I think I have cited enough cases to show where money has been lost by not understanding the feeding problem. You may think me a “crank” on protein (perhaps I am), but when I see so great a loss from the lack of it in the feed, and knowing the money it has made for me, I cannot but hold it up to the farmer and have him understand its importance. I would urge farmers to give the feeding question more study so as to get more out of their feed than it cost. (Applause.)

Mr. Piollet. From what source did you get the protein?

Mr. Stoughton. From the by-products. My cows went to fat, and fat will not produce milk; and when I learned a little later on that I should sell my corn, and buy gluten feed, which is a by-product of corn, I had plenty of milk; and I furnished my protein to balance up the rough foods that I had. I had silos; but it wouldn't do.

Mr. Piollet. Did you use any hay?

Mr. Stoughton. I did.

Mr. Giffen. As the result of losing sheep by not feeding a proper diet last winter, I happened to be in the county of Bradford, and while there I was spending a part of the time with the sheep men of that county. One had lost quite a number of sheep year after year. You are aware that Bradford is quite a sheep county. I told him where the trouble was, as mentioned in the paper just read, and there were no deaths after that. His sheep would average in the neighborhood of six pounds and a half of fleece—the product was as good as any in the county. After I got hold of the sheep, I raised the product



to over thirteen pounds. I did not feed timothy hay, as he did; but substituted the best of clover I could get, including plenty of sulphur.

Another thing, in speaking of hogs, I find in my experience, to feed them milk is the best balancing food that I can find. There is no one food that is properly balanced. Clover and hay come next; then cotton and linseed. But I would not advise cotton seed or linseed, but bran next. To use corn, I would put that on the other end of the string; but use enough to balance up the feed.

Mr. Barber, of Union. I would like to ask Mr. Armsby a question. A good many writers state that it is not safe to feed cotton seed meal, and yet it has been the cheapest source of protein—according to one party, 43 per cent.—making it much cheaper than any article of food. I fed it last winter with very good results. I understand that there have been experiments made.

Dr. Armsby. I know of no good reason of there being any danger by using it with care in animals. We have used it, and up to five and six pounds a day to milch cows, without being able to observe any injurious effects whatever. I have no doubt that others in dairies have had the same experience. Steers are fattened to a considerable extent with cotton seed hulls and cotton seed meal. Provided the meal is good and fresh, and not musty, and contains no injurious germs, and fed judiciously, it seems to me there is no danger. With young animals it is somewhat different—as with pigs and with calves, injurious results have followed the use of cotton seed meal; or especially in calves and pigs; but less frequently in case of calves. I think caution should be used in feeding to stock of any kind; but with matured stock, and of good quality, I do not think it is dangerous.

Mr. Peck. Is cotton seed an astringent?

Dr. Armsby. Yes, sir.

Mr. Peck. Astringent qualities in one case, and laxative qualities in the other?

Dr. Armsby. The one is linseed meal, which is laxative; and the cotton seed meal has astringent properties. A mixture of the two makes a very good combination.

The Chairman. While Mr. Stoughton was reading his paper, Dr. Frear entered the hall. We will now hear Dr. Frear's paper.

Dr. Frear. The paper that I had prepared is on a subject we have discussed before; and as that is a trite one, I do not expect to say anything on it now. But I have prepared an essay for institute discussion. Now, we have various classes of institute topics, and very properly. Some subjects are those which deal of modern development. For example, the dairy work; the new form of butter print; some new way, for instance, of putting up an attractive package, and arranging it with a view to placing upon the market. I have

other subjects which deal in general principles. Those should be in many cases handled at some length. They involve a good many applications; but for the sake of simplicity but few can be treated. The difficulty has been that the speaker who has made a special study of the subject, and the hearers, who have never studied it in its general phases, are never together; so it is necessary for the speaker to use some homely form of expression, and gradually press home the theme, as it takes some time for the hearer to take up the subject. I shall not attempt to read in full from the paper, but simply to select a few of the thoughts as I go.

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## SOIL MOISTURE AND SOIL CULTIVATION.

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By DR. WILLIAM FREAR, *State College, Pa.*

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It is clear to the thoughtful farmer that those stirrings of the soil which are secured by the various operations of tillage, assist in more than one way in the increase of crops. The most obvious objects of cultivation, are the destruction of existing vegetation, either by burial, as in the case of sod plowing, or by the removal from the soil, as in the case of surface cultivation by use of light cultivators, weeders, etc., the better exposure of soil particles to the action of the air, the loosening of the soil for the better formation of a seed in which the tender rootlets may readily spread and a deepening of the surface soil and increase in the volume of material upon which the plant may readily feed. Important as each one of these obvious purposes of cultivation is, there remains another purpose, less obvious, it is true, but more important than either of them, namely; the regulation of soil moisture, and especially the prevention of its wasteful evaporation. It is to this use of soil cultivation that I wish for a short time to direct your attention.

That water is of great importance to the growing plant, because the plant is largely made of it, must be evident to the most casual observer; the juiciness of the potato, the turnip, the grape and of the common garden and orchard fruits which contain from seventy-five to ninety-five parts of water to every hundred parts of dry matter, is at once evident. The lad who, in the older days of hay-making, followed after the scythe and spread the heavy green grass of the swath

and who later assisted in raking up and loading the cured hay, was well aware of the difference in weight between the green, fresh-cut stalks and the light wisps of hay remaining after the sun-curing. He had good reason, for the fresh-cut grass itself contains from three-fourths to four-fifths of its weight in water, while the cured hay rarely contains as much as one-seventh of its weight of water; so that the green clover, corresponding to a two-ton crop of clover hay, would weigh from 6.8 to 8.6 tons; or, in other words, the water in the green crop would weigh from 10,300 to 13,800 pounds. Even matured wood contains two-fifths of its weight of water, and such is the power of many of the solid materials of which the plants are chiefly composed to take up the water without becoming moist to the touch, that they often seem perfectly dry when containing from one-tenth to more than one-fifth of their weight of water; corn starch, for example, can take up 20 per cent. of water without appearing moist, and hence is often used to mix with salt, baking powder and other materials which tend to take up moisture readily and become damp or liquid as the result. It is not necessary to know the uses to which the water in the plant is put, in order to be sure of the great importance of this substance to the normal actively growing plant.

There is another side of plant life which may well be considered in this connection. Every one is familiar with that condition which plants assume when deprived of water for any length of time and which is called "wilting." It is clear that the plants do not thrive when in such condition, and that, if the wilting continue too long or become too far advanced, the cutting or the plant itself loses the power of again assuming its normal condition. The wilting of a cutting is clearly due to the loss of water; but why do whole plants wilt? If a sound branch or leafy twig be enclosed in a bottle so that the air about it cannot be renewed from the outside and, after a short time, cold water be poured upon the bottle, dew will be deposited upon its inner walls even on a dry, windy day. This dew is breathed out from little openings or mouths in the surface of the leaf and is, day and night, being given off into the atmosphere by the plant, most rapidly from the leaves, but, to some extent, from its entire surface. It has been found, by very careful experiment, that plants are unable to take up any considerable quantity of water from the air, even though this water come into contact with the leaf in the form of fog, rain or dew. If, then, the roots do not take up the moisture from the soil as rapidly as it is given off from the leaves, there must be a growing deficiency in the water, present in the plant. When this deficiency is too far increased, the plants lose their stiffness and are said to be wilted. The wilting, of course, is not so apparent in the stiff, woody parts as it is in the more tender portion of the plant. In some cases, the loss of only three to four per cent. of water is sufficient to produce



a wilting appearance in a plant which previously seemed entirely normal. Plant physiologists have concluded that the appearance of wilting is not the first sign of moisture loss, but is one of the last signs, and indicates the existence of a seriously injurious state of affairs within the plant.

Several kinds of injury may result from wilting. Boussingault long ago observed that leaves which are somewhat wilted, are unable to fully perform their work of taking up carbon from the carbonic acid of the air, a function upon whose performance in the plant, the formation of starch, sugar and wood, the most prominent building materials of the plant, depends. He found that if the leaf lost one-third of its water, it took up only two-thirds as much carbon as before; and that, if it lost one-half of its water, it took up only one-fifth as much carbon. These observations have been confirmed by other experimenters.

Again, the expansion of the tender parts of the plants, such as buds, young twigs, leaves and tender stalks is in great part promoted by the sucking in through the plant roots of a large supply of water which places a tension upon the tender tissues and causes them to push forth somewhat as the air blown into a soap bubble causes its enlargement. When wilting occurs, this aid to growth is, of course, absent.

Another point is worthy of notice in connection with the influence of wilting upon the plant. The latter does not wholly stop its action; it does not stand still in its tissue-forming and, in some cases, it is clear that the kind of tissue that is formed on wilting is somewhat different from that formed when the plant has its usual supply of water. In the case of tobacco, it is found that the plant must experience a steady, uninterrupted growth in order that the highly desired, thin, fine-textured leaf may be secured; for, if the leaf at any time be wilted, it at once tends to form a thicker tissue and this tissue is incapable of later modification to form the thin tissue desired. In many plants, doubtless, this sort of injury would be less apparent and possibly less important. It is normal, then, for a plant to give off water through its leaves. It is clearly impossible to prevent plants growing in an open field from such loss of water, though we may diminish the loss in the case of potted plants growing in a green house or other confined space. It is needless to discuss whether or not such a giving off of water is necessary to the life of agricultural plants when we know that it is bound to occur with all field crops.

To form a proper estimate of the importance of water to the plant, we must know not only the amount that is present in the plant during its active growth, but, in addition, the amount which it gives off by this breathing process, and which must be replaced by the roots, if the plant is to be kept in a strong, active condition. A great many



careful experiments have been made to determine this latter quantity, and the results obtained have naturally differed with the plant and the conditions of the experiment. Time will not permit, in this place, a relation of the methods of these experiments and their detailed results. It is sufficient to say, that experimenters agree that, according to the kind of plant and the conditions of growth, it breathes off from two hundred to six hundred and fifty pounds of water for every pound of dry matter that it forms. We may take four hundred pounds as a fair statement of the amount of water given off by the average farm crop in America, for each pound of dry matter formed. On this basis, it may be calculated that, in addition to the six to eight tons of water which a two-ton crop of clover hay contains at the time of its cutting, it will have breathed out into the air during the growing season, about eight hundred tons of water. At least this amount of water must be supplied to the crop from the soil and it becomes an interesting question whether or not the soil receives during the growing season, after making due allowance for the proportion of rainfall that runs off over the surface of the soil or that is drained out through the subsoil, enough water to furnish such a supply.

Hellriegel's experiments at Dahme, Prussia, show that, for a crop of short period of growth, like barley, the rainfall, occurring during the average growing season, is only about two-fifths as much as is necessary to produce the maximum crop, even assuming that all the water falling upon the earth passes into its pores. A much smaller portion will, of course, suffice to produce the average crop; but even for such crops, there are many seasons when the rainfall, even in the humid portion of the United States, is scarcely sufficient to supply the moisture exhaled by the plants during the average growing season, although it be assumed that none of the moisture is lost to the plant. This statement could be supported by the results of many experiments, did time permit. It is, however, sufficient to say that it is clearly established, that the water needed by the growing crop is commonly greater in amount than the supply which can reach the plant from the rainfall of the growing season. The present yield of crops would be possible, then, were it not for the fact that the water falling during the remainder of the year is more or less largely stored in the soil for the benefit of the growing plant, or, in the regions where summer irrigation is necessary, stored in the great snow caps of adjacent mountain peaks and in the springs of their hillsides.

It would be of interest, in this connection, to discuss the influence of texture of soil and its cultivation upon the amount of water which is held by the soil, as compared with that which flows from off the surface during the rainfall; but it is necessary to pass on at once to consider another question, namely; the influence of cultivation upon

the preservation of soil moisture. The soil acts as a reservoir and as a wick. It is able to do so by virtue of its being possessed, not like glass of a solid non-porous substance, but rather of a large number of small particles of mineral matter, making it highly porous. The pores are, of course, very small in all soils fitted for cultivation. Some notion of the extreme fineness of these pores may be gained from the following facts: A single ounce of the coarse "pine barren" soil of Maryland, contains nearly a billion particles, while the very fine Trenton limestone clay soil of Shenandoah Valley, has been found to contain nearly eight hundred billion particles in an ounce. The empty space in a cubic foot of dry, sandy soil is about one-fourth of a cubic foot; while in a very fine clay, it sometimes exceeds one-half of the entire volume of the dry soil. The pores are, of course, very variable in their diameter and in no soil, fitted for the growth of agricultural crops, should all the pores be filled with water; because the roots require a supply of air to be constantly maintained. By reason of its pores, it is clear, then, that the soil may act as a reservoir, and also that it may act, by virtue of its porosity, as a wick does in carrying oil from the bowl to the flame of a lamp; so that, with a fair supply in the sub-soil, water may be lifted to the growing roots as the supply in their immediate neighborhood is diminished. King has found that in the drift soil of Wisconsin, the corn crop sometimes utilizes water situated at a depth of seven feet below the surface.

There are two ways in which stored water is lost from the soil; the first is by seepage or drainage. The second is by evaporation from the naked surface of the soil. During the winter the loss by drainage is larger. Mr. Dickinson, experimenting at Watford, England, found that 70 per cent. of the water falling from January to March, filtered into the lower soil; while, during the summer time only two per cent. entered it. It is highly important, then, that the farmer should utilize all practical means to prevent the loss of water by evaporation from the naked soil. The housewife, who desires to keep upon her stove a supply of warm water, without, at the same time, using too much fuel or carrying too much water, reduces the loss caused by evaporation from her tea-kettle, by the use of a metal lid. Likewise, the farmer must put a lid on his soil. It would, of course, not be practicable to cover the field with a perfectly impervious cover, although in the cold frame and in the green house, we have instances of large structures which accomplish this result. The farmer, for his field crops, must evidently adopt some other means.

It is interesting, in this connection, to observe a few facts concerning the influence of various coverings upon the moisture at the soil surface. Turn over, on any dry summer day, a loose board of a board-walk. The surface of the soil that it had covered is seen

to be darker and more moist than the surrounding surface; snails and moisture-loving beetles have sought refuge beneath its shelter, and thick, vigorous roots of grass are seen stretching along directly upon the surface of the protected soil. The grass growing immediately alongside is usually higher than are the blades growing one or two feet away from the walk. In other words, it is perfectly apparent that the board has, in this case, acted as a lid to prevent the too great loss of water.

Again, let us go to the hay stack or straw pile, if it be situated upon bare soil, and rake aside the loose hay or straw at the base of the stack; the same moist condition of the surface soil and development of roots upon the surface is seen here, as in the case of the boardwalk. In other words, woody matter, such as straw, tan bark or saw dust, if in a moderately thick layer (two to six inches), in a very large measure prevents the escape of the moisture from the surface of the soil just exactly as a solid board would do. It is clear that a layer of mulch or straw, scattered over a garden bed, will preserve to the plant, growing upon that bed, much moisture which would otherwise have been lost; while, at the same time, the growth of plants, whose tops are too low to appear above the mulch, is retarded or entirely prevented. The use of the straw mulch in strawberry culture, is thus made clear without taking into account the protection of the ripened berry from splattering with earth. From this let us turn to the pile of gravel or sand lying near some mortar bed and, upon scraping aside the loose material from the surface of the soil, it is found that this surface exhibits the same appearance of dampness as was manifested in the foregoing cases.

Finally, if the still finer material from the surface layer of a well tilled garden bed be scraped off, however dry the loose surface material may be, it is found that the soil below is more moist than is the soil in other parts of the garden which has not had the benefit of a covering of loose stirred soil. When the firm surface crust is broken by the plow or the cultivator, it is as if the wick of the lamp were cut in twain just below the flame, and the ends then either separated from one another or left but loosely in contact; the upward passage of the liquid from the reservoir is stopped, the dissevered part of the wick soon dries, and loss by evaporation is nearly or entirely stopped; so the water rapidly evaporates from the loose crust and it is made very dry, but the moisture from below is no longer readily absorbed by the loosened soil, and the loose layer prevents the access of sun and wind to the compact, moist layers underneath; and the moisture thus remains to supply the rootlets that everywhere penetrate the soil. It is clear, then, that the farmer has, in the material of the soil itself, a substance which he may use as a lid to pre-



vent the excessive or wasteful evaporation of the water, so that it may be reserved for the use of the growing crop.

The importance of water to the plant, the frequent insufficiency of current rainfall and the consequent need for putting a lid on the soil, as it were, to preserve the moisture stored there, and the means whereby such a covering is made practicable, having been thus outlined, it is desirable that a few features of general tillage operations should be considered in their relation to this prevention of undue evaporation.

In the first place, let us consider the subject of spring plowing. At this time of year, the surface soil is quite well filled with moisture and because of high winds, is subject to a rapid loss by evaporation. The sooner the sub-soil moisture is protected by that stirring of the surface and mulching which results from spring plowing, the better. In the case of clay soils, it is, of course, necessary that the soil should have drained sufficiently to prevent its becoming "puddled" by the tramping of the team and the pressure of the plowshare. But, with due care upon this point, the earlier the plowing, the less the waste of the store of soil moisture. Prof. King has found that the loss of water arising from a delay of two weeks in plowing for oats was equal, in one instance, to almost the entire April rainfall. The method of examination adopted by him in this experiment and in others to which reference will later be made, was as follows: The soil was removed by sinking test holes at a number of points over the ground under observation. The soil was removed in successive layers of one foot depth and these layers separately weighed, dried and re-weighed, to determine the quantity of water present at the various soil depths represented by them.

At the close of the period of experiment, another set of similar samples were taken. The differences in the sets of results obtained, show the gains or losses of water at the several depths. It is further evident that attention to this point of spring plowing becomes additionally important when the fall and winter preceding have been marked by a deficient fall of rain and snow.

How soon should the harrow follow the plow? As the result of plowing, the surface soil is thrown up into ridges; these ridges present an increased surface for evaporation, for the same reason that it is a shorter distance through the mountain from base to base than it is over the ridge. It was remarked earlier, that the broken surface soil dries very rapidly. Is not the drying of the furrow slice precisely what is to be expected? Two evils result from this drying: First, the amount of water lost is large, amounting in many instances, to from 200 to 300 tons per acre, which is equivalent to between two and three inches of rainfall—an inch of rainfall over an acre weighing 113.4 tons; second, the seed bed becomes altogether too



dry and its moistness later increases so slowly that the germination of the seed is greatly retarded. It is important, then, that the furrow slice should, in turn, be protected from wasteful evaporation. This is accomplished by the use of the harrow, which should, in all well regulated spring tillage, follow promptly after the plow. Instead, many a farmer plows to-day, lets his furrow slice lie exposed to the sun and wind for two or three days and then harrows, and wonders why the seed he plants on this bed is so slow and irregular in coming up.

There is a difference, too, in the harrow; the disk harrow is excellent on many soils as a pulverizer; but, as the teeth are often set, it leaves the surface covered with a long line of low ridges. The perfectly harrowed field is, on the contrary, covered with a perfectly smooth bed of fine loose soil.

The roller, too, is highly valuable in moisture regulation. The prime purpose of plowing is not to form a mulch, but to destroy existing vegetation or prepare a seed bed. The furrow slice, especially when cut from heavy sod or a compact soil, rests upon the subsoil at only a few points; that is, the wick touches through only a few strands. If the protection of a subsoil moisture were the chief purpose of plowing, this imperfect contact between the subsoil and the furrow slice would be best; but the seed bed must be moist, since the seed will neither germinate nor the roots develop, except in the presence of considerable moisture; and should a tender rootlet happen to pierce into a cavity filled with air, it would speedily die. It is, therefore, necessary in the case of spring plowing, to promptly accomplish by artificial means, that restoration of contact between the furrow slice and the subsoil which, in a case of fall plowing, is slowly brought about by the action of the winter rain and frost. The roller is the most valuable implement for this purpose. As a result of its pressure, the furrow slice is pressed down into contact with the subsoil; the seed bed is made more compact and its pores diminished in diameter, so that its wick-like action is more perfect throughout. In consequence, in a well-rolled seed bed, moisture is soon brought again in considerable quantity to the very surface of the soil; and, if the rolling follow again after the seeding, the soil is pressed closely about the seed and its best germination is assured. It may be noted also that because the surface of the soil is made smoother, the loss of heat is often diminished and the soil becomes several degrees warmer in consequence, thus again improving the conditions of germination. With so compact a seed bed, however, the loss by evaporation is increased, though it does not equal that from the original compact soil surface; still, it is too great to be permitted to continue longer than is necessary to secure a good early start to the vegetation. Once the young plants are up and fairly rooted, a light harrowing should generally be given to restore the

surface mulch, whether the crop be a closely drilled, rowed or hilled culture.

Subsequent cultivation merits some attention. It has come to be recognized that weeds are commonly more injurious because of the water they take from the soil, than because of the mineral foods they consume, or of the shading the growing crop may sometimes cause; whatever the chief mode of injury wrought by weeds may be held to be, it is the prevalent belief that the chief purpose of cultivation is the destruction of weeds. This is highly erroneous; the principal benefit from cultivation, is due to the formation of the soil mulch, or in other words, to the lids it puts on the soil. Right here, it may be queried, does the depth of mulch affect the amount of moisture saved? The mulch being a porous covering, cannot entirely cut off evaporation; a deeper mulch must, therefore, be more effective than a shallow one. King found that when a soil which was losing six and a quarter tons of water daily, per acre, was stirred to the depths of one-half and three-fourths inches, respectively, the loss was cut down to 5.73 and 4.52 tons, respectively, the added thickness of one-fourth of an inch thus greatly multiplying the protective action of the mulch. It is, however, not to be expected that a further increase of depth of mulch would have been attended by so great an increase in the saving of moisture.

In case of crops which are planted in widely separated rows or hills, the cultivation which is given immediately after the tops appear above ground or, in case a harrowing immediately succeeds the appearance of the plants, the cultivation which promptly follows the harrowing, should be deep, rather than shallow. Theoretically, all cultivation should be such, were it not for the fact that the development of plant roots prohibits. For it must be remembered in the first place, that plants take up their moisture almost exclusively from the most recently formed, thin-walled rootlets and root hairs, the roots whose bark has become corky, having no power to take up for the use of the plant any considerable quantity of water; and in the second place, that the root system, in the early growth of the plant, develops much more rapidly than the top. I have found that in a loose, loamy soil, corn roots extend nine inches horizontally from the seed when the top has attained a height of but four inches; and that by the time the stalks are nine inches in height, the roots of plants in adjacent rows have begun to interlace. It is true that frequent deep cultivation immediately after the tips of the plant appear above ground will keep the roots at some inches below the surface for a time; but when the plant is in full vigor of growth the extension of roots is very rapid and the surface soil is quickly filled with the young thread-like rootlets. In consequence of this fact, later cultivation can be made deep, only at the expense of cutting off the

greater portion of the absorbing root surface of the corn plants. Most careful investigation by a number of experimenters under a great variety of conditions, has proven, conclusively, that such root-pruning works an injury from which the crop never recovers. Obviously, then, the old shovel plow cultivator has been wisely left in idleness, while such cultivators as seek to secure a shallow but complete pulverization of the soil and removal of the growing weeds are to be preferred. What has been so thoroughly demonstrated with reference to corn, is also found to apply, with minor modifications, to other cultivated crops.

Cultivation after summer showers deserves a passing word. Wind and sunshine being equal, evaporation is most rapid from a soil whose pores are filled with water; likewise, water moves most freely through a soil whose pores are filled. For this there is a very plain analogy in the water systems of our larger towns and cities. When the pipes are full and water is being discharged from a few small taps, a current passes chiefly through the centre of the pipe, and there is little friction, and consequently little loss of pressure; but when, in case of fire, a number of large fire plugs are opened, the water rushes through the whole of the pipe, and violent friction soon sets up between its walls and the moving water, with a result of great loss of pressure; hence, it is necessary when a fire service is desired, to lay very much larger mains than would be required for domestic service simply. In this connection, it may also be remarked that, because the pores in the clay soil are of such very small diameter, as compared with those in the sandy loam, that water is taken out of them or pushed through them with much more difficulty; consequently, in dry weather, the supply of moisture for plants rooted in a clay soil is more slowly replenished from the subsoil than it is in the case of plants rooted in a sandy loam; so that plants will often wilt in a clay soil and remain unwithered in a neighboring sandy soil, even though the clay has really more pounds of water per acre in its pores than the sand contains. From what has just been said, it is clear that in dry summer weather, as the soil dries out, the rate of evaporation must be limited. It is to a curious result of a sudden increase in the amount of moisture in the surface layers of soil during hot weather that I wish to call your attention. The recently added water being near the surface, is, of course, liable to rapid loss by evaporation. To preserve it alone would be worth considerable effort. A secondary result of great importance follows the addition of water to the surface, namely; water promptly begins to pass rapidly up from the lower layers of the soil and is lost with that added to the surface, unless measures be taken, promptly after the shower, to restore the surface mulch; thus, King found that on a certain loamy soil to which he added water equal to 1.33 inches



of rain, the soil to a depth of four feet gained in twenty-four hours by the movement of water from neighboring soil an amount equivalent to 3.69 inches of rain.

A practical suggestion from these curious facts is, that frequent light sprinklings of the garden and flower beds should be avoided, since they do more harm than good; and, instead, when artificial watering is undertaken, it should be done thoroughly over the area treated and followed promptly by cultivation. It is also evident that in dry summer weather, cultivation should follow as promptly as possible after a shower, even though the crop has been carefully cultivated just before the shower, the action of rain having almost completely beaten down and compacted the stirred soil.

In conclusion, it may be broadly stated, that while the farmer has not yet learned to control the wind and rain, he has, in his operations of tillage, means by which, with due exercise of skill, he can almost as effectively mould the development of his crops; and that at no point is the good farmer distinguished from the poor farmer more than by the adaptation of the operations of tillage to the regulation of water, the principal fertilizer, in the soil. (Loud applause.)

A Member. Which is best, to roll first, or to harrow?

Dr. Frear. That depends a good deal upon the various soils. I would prefer in cases of soft soil, to roll first and then put on the harrow; where it is a little hard, to harrow right after the plowing.

Colonel Woodward. How about the rolling—invariably in the same direction as the plowing?

Dr. Frear. Yes; I think that would be the best.

Chairman Hiester. The next paper is on "Some Late Experiences," by A. Judson Smith, Esq., New Millport, Clearfield county, Pa.

Mr. Smith. I think the better plan would be to quit reading papers, as the audience are tired now by the long session.

Secretary Hamilton. I think you had better take the time.

Mr. Smith then read his paper as follows:

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## SOME LATE EXPERIENCES.

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By A. JUDSON SMITH, *New Millport, Pa.*

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A German brother said, "Augsperience vas a good teacher but vas sometimes late gettin' 'round."



## A BIT OF HISTORY.

My native county has not been an agricultural county, and even at present, the lumber interests are not a small portion of its resources; but many of the farmers who formerly depended more upon their winter's lumbering than their summer's farming for maintenance, now must depend entirely upon agriculture. The lumber interests in our county are, in one way, at least, detrimental to the farming interests, for the reason that about farming time in the spring the laboring men go to the woods. Jobbers can afford to pay higher wages than farmers can; besides, the shorter hours of work do not apply to farming as to other vocations.

While I have allowed my men the fixed hour system and know that at certain kinds of work, ten hours is enough, the large variety of work on the farm and the time taken changing work, then taking off the time for getting teams ready, we seem to get along very slowly. It is also very much harder on the team in the early spring months, to drive them steadily ahead than to have time enough at your disposal to give frequent rests, and still get something accomplished; their shoulders do not scald and they do not become fagged. Evidently, the modern farmer must study to cheapen production. We cannot do our best in agriculture until lumbering is a thing of the past. Perhaps, then, our markets will not be as good as now.

## INSTITUTES.

We notice a decided improvement in our county in the past few years, attributable to, at least, two causes; more attention to the farms for lack of something else to do, and the good work of the Farmers' Institutes. Beside the four days of good institute work under the auspices of the State Department of Agriculture, we had five institutes of two days each managed by the county agricultural society.

We will probably always have some people who know too much to learn anything at a Farmers' Institute, but the number is growing beautifully less. Do as they will, even that class cannot but be helped involuntarily by the meetings. They learn by watching those who do take an interest in the work; by watching their progress, and thus we hope the whole lump will be leavened. Some of the same class are those who profess to believe there is no advantage in raising thoroughbred stock. Yet if they can get a calf from your thoroughbred bull, by accident, or eggs from your improved fowls by exchanging, they are sure to make it known to prospective purchasers.

## ROADS.

I want to speak of one thing in particular which the Farmers' Institutes have done for our county in the way of road improvement. The seed thoughts that sprang from the fertile brain of our present

Secretary of Agriculture, causing, I will admit, much adverse criticism and agitation, will bear good fruit and show their good effect long after his work is done. I believe that fifty to seventy-five per cent. of the supervisors half believe that a round road is much more easily kept passable than the level or hollow one, and are working to that end. Public sentiment is also turned in that direction, and we hope that soon the school children and the most obstinate, obstreperous "mossback" will know, acknowledge and affirm that the qualities of a good road are roundness, smoothness, solidity and easy grade. Rome was not built in a day; neither were the Filipinos whipped—but they will be. So will the roads of the State be improved, if we keep continually at it. Let us slide some of them down from the steep cliff that they occupy, even if it does not go by the house of Mr. A, and Mr. A will get his house to the foot of the hill, where it ought to be. Future generations will arise and call us blessed, and when they see the mark of the old route over the hill that has wearied us so much, they will wonder what ever possessed an engineer to locate a road there at all. They will also be thankful that they do not need to run their automobiles by the old route.

#### INTENSE FARMING.

There is a song in which one of the singers says:

"A little farm well tilled,  
A little wife well willed,  
Give me, give me."

While we do not know that it is so particular about the size of the wife, as it is about the size of her temper, we believe that the song writer's idea of a farm is correct. A few years ago I came into possession of a lot of poor land for a lot of good money. It is generally considered that the industrious are most successful in this life; but in this instance it would have paid the former owner of this land to have been lazy. (The present owner does not figure in that part of it.) The land was covered with an immense growth of splendid pine, hemlock and hardwood timber, such as would have been a feast for the eyes of Dr. Rothrock. This timber was, at first, cut into logs, rolled into heaps and burned; or later, with millions of feet of others, sent down the Susquehanna to help build the cities of Williamsport and Lock Haven. Land just like it that had not been touched by the woodman's axe, sold a few years later, at one hundred and twenty dollars per acre, for the timber, while the farm of which I speak, would not sell for over twenty dollars per acre, after more than sixty dollars per acre had been spent in making it tillable.

This is "ancient history," but brings us to the time where the writer shouldered three hundred acres of this land and has been try-

ing to lug it ever since. The virgin soil had been good, but was farmed so desperately that it took considerable courage to tackle it, being somewhat ashamed.

#### TILLAGE.

An experience with field No. 2, last year was to me so remarkable that I have concluded to relate it. This field had a semi-slate soil and had been farmed until it could not raise an objection. Its death-knell seemed to have been sounded, for a favorite crop by the former owner was not thought worth taking off. I have the impression that it does not add to the fertility and utility of a field to have stock tramping on it in all kinds of weather. The field was left to itself for four years; two of these years, we found time to mow it, leaving the weeds, etc., on the ground as a mulch. Locusts and other bushes began to grow, and we concluded in the fall of 1897, that we must plow it or have more woods than we wanted. We broke it up in the fall, and in the spring cultivated it, first with a spring tooth harrow to level it down, then with a spading harrow to work it up, finishing with a spike-tooth harrow to make it fine, until the men helping, thought I was crazy or very forgetful. We harrowed it just before we planted, and after we planted, and kept up the cultivation as long as possible. We did not put an ounce of fertilizer upon it, and I was not only surprised, but almost amazed, when we found it had produced more than six hundred bushels of corn upon eight acres. That, of course, was not a crop, but we expected little but fodder, and we needed plenty of that for our cows.

#### SOME BREAKERS.

Speaking of cows, brings to our remembrance an experience, which we hope not many poor farmers, at least, may have. After looking over the lot of ground that came into our possession, we concluded that about the only thing we could do was to turn it into a stock farm, and decided to invest in some thoroughbred cattle, little thinking or knowing, at that time, of some of the breakers ahead. We consoled ourselves that the most trouble was over when we secured the large amount of money necessary to secure a small amount of cow. That having been accomplished, we went along until suddenly we encountered one of the most disastrous foes to the dairyman. So little is generally known about it, that I feel it to be very important that prospective dairymen should know more about it. May my mite help to spread the information, as to its calamitous effects, and perhaps save some one a great deal of annoyance, as well as money. Several hundreds of dollars was the price I paid to learn by experience what I might have learned at small cost, had the matter been brought



to my attention; but it is said, breeders are slow to give their misfortunes to the world, and perhaps that is best for them. I have reference to contagious abortion.

It seems strange that so noted an authority on dairy matters as Ex-Governor Hoard should remain in doubt about the contagion. If diphtheria, scarlet fever and small-pox are not contagious, perhaps abortion may not be, but we have even more conclusive evidence of its infectious character. Until recently, little seems to have been known about the disease. After considerable scientific research in the past few years, little, it appears, has been discovered as to its origin. I was raised with cattle, if not in the same stall, and thought I knew considerable about them; yet of the native cattle kept on the farms in our vicinity, I never had heard of or seen cows affected with this disease; hence it was one of the things not taken into consideration when counting the cost of breeding and dairying. Do not understand me that native cows are exempt; they are as much subject to its contaminating influence as are thoroughbreds. Its cause, so far as we know, has never been discovered. Mr. Watson, a veteran herdsman, gave in the *Breeders' Gazette* a number of lengthy articles on its causes, and veterinary surgeons have given their views, but not one of all those suggested as the probable causes applied to the case I learned so much. After reading all that could be found on the subject, studying the case and watching for proofs, we were convinced that, like some other diseases, its pathogeny was not well understood.

The statements that outward conditions, such as foul water and stables, seeing and smelling certain things, are responsible, is, in my opinion, veritable nonsense.

It would seem just as reasonable to say, that appendicitis or peritonitis was caused by sleeping with a bald head. The originator of the disease in my herd was a fine registered Guernsey heifer, that I had taken better care of than I had of my Sunday hat. I had paid a high price for her to both the breeder and the express company. She was bred when fourteen months old, and only the once, so was not contaminated by coming in contact with any diseased animal. I bred her to a young male that I had raised and knew she was not infected from that source. He was, however, too young, and this is the only fault in the entire management; but we have had several as young and younger that came through all right, hence that is far from proving anything. Very frequently I read in the agricultural and dairy papers something like this: Several of my cows have dropped their calves prematurely; what is the trouble?" And as the great tears of sympathy or something else well up, I commiserate that inquirer and say, "trouble enough, my brother."

What cold satisfaction is the reply. Of course, a wise man when he is questioned must make a reply, and it is usually something like



this: "Isolate the sick cows and disinfect;" and I say to myself there is another poor man who must learn in the high priced school of experience. If I had ever known of such a disease and of its character, I could have throttled it on its first appearance, and could have saved a loss of hundreds of dollars, and, in numerous instances, of my temper. The heifer I speak of, was bred on the 29th of October, and aborted June 16th of the year following, or 230 days after service. I find that the first abortion usually occurs about eight months after service. But a week or more previous, she showed unmistakeable signs of premature delivery, as I know now, when too late. Had I isolated her at once, as nothing had then been infected, I would, doubtless, have saved all the trouble and loss which followed. I combatted the disease with more or less success for four years, and I speak advisedly, when I say, with trouble and expense.

From my experience, what would I advise? When we get into trouble it is not an easy matter to say how to get out, without some trouble and loss. Had I a herd attacked by this pest, I would not breed the aborted cows at all. Unless very valuable, I would dispose of them, and the male also, if he had been contaminated. If valuable, I would keep them until they were entirely well without breeding, which would be, perhaps, a year or eighteen months, and then keep a male exclusively for them. If I had the means, I would use Mr. Vallency Fuller's remedies, and thoroughly disinfect the stables, and would have no heifers or new cows about until I was certain the germs were dead. It will expend its force in time if you give it no new fuel.

#### MANAGING THE BULL.

The question of how to handle the bull is one of much importance, and presented itself among my first experiences. I referred it to Hoard's Dairyman and got several answers, more or less hedged and quite different in the main. One would pound him into subjection at all hazards; another would treat him as gently as they would a lamb. The bull is a very dangerous animal. Even a lion and a tiger were unequal combatants in a Spanish bull fight, and it was found necessary to secure an elephant, another herbivorous animal, to subdue him, which he did by breaking his back. Every herd of any size needs two bulls, and many farmers have been surprised that I should keep two in the same paddock and they expend their surplus energy upon one another. Maister of Willswood 3733, is a Guernsey, five years old, weighing when in good condition, about eighteen hundred pounds, and is of the fighting, champion blood. Yet we have had no trouble to handle him, and put him on a treadpower to cut fodder with out difficulty. The plan has worked so well that I would

sooner feed an extra bull, even if I had no use for him if he was valuable and dangerous.

#### BREEDING HENS.

I could not well close this paper without a word about my hobby—the poultry industry. I had a new experience. My two year old hens moulted early last year, and as I had no pullets, I fed them well and carefully and they produced well; however, owing to the enforced confinement, they became fat. I find that a large percentage of the chicks hatched from eggs laid by fat hens, are lacking in vigor. Many fertile eggs never reach the hatching point, and many others are so weak that they do not get out of the shells, and there are many deformities of one kind and another. I found that later on, when the hens had lost some of their surplus fat, that the eggs produced two hundred per cent. more of strong chicks.

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#### EXHIBIT OF FOOD ADULTERANTS.

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Major Wells. Mr. Chairman: We have here an exhibit of samples gathered by the Pure Food Department. Prof. Hamilton thought it might be interesting to you to see this. We have them arranged so that they need very little explanation. Most of these samples are labeled.

I would like to call your attention to a few things. We have here a number of meat preservatives. These are not obtained by our agents, because they are unable to procure them. You can see their various hues, from white to pink, and to dark red. They serve the double purpose of preserving, and also coloring meats, to give them the appearance of freshness, when in reality they are partly decomposed. It is then these applications are made to them.

Mr. Piollet. Is that the method of embalming the army beef?

Major Wells. I am not speaking of army beef. Going down the road the other day, I was at a lunch counter, and as a matter of curiosity, I bought a piece of sausage. Probably the history of that sausage is, that it came from some butcher shop after it was unfit for market; and in order to use the meat it went into the grinder and was chopped up and mixed; and in addition to the meat, it is composed of boracic acid, and some other preservatives analogous to coal tar. That gives it the fresh appearance, and also preserves it, and will as long as the ingredients remain in it. I believe these meat preservatives are made use of very generally. I know they are offered for sale in

houses in Philadelphia and Baltimore, where we have procured these samples. They are sold by agents throughout the State to butchers generally. If there are any butchers here in the audience, I have no doubt that they have been waited upon to buy these articles to preserve their meats. Of course, it is a very desirable thing to do, if it can be done harmlessly; but the use of salicylic acid is condemned, and the boracic acid is not considered to be a fit article in food. Our agents in Pittsburg found a number of articles containing boracic acid; and the result of those trials in the courts, will depend largely upon the medical evidence that may be offered, or brought out, in regard to the nature of these preservatives.

Now, I spoke of the difficulty of securing these. One of our agents called at a Philadelphia establishment, and said that he would like to buy some of the meat preservatives that they sent out at wholesale to manufacturing establishments. The man who met him said he could not sell them that day; and the excuse was that the proprietor was not in. When he called again, he said that he would be happy to furnish them, and I have got quite a collection. Here is one of the original packages, and without a scrap or vestige of printed matter for it; and we have not been able to get a package with the directions printed on it. To those people it is best known perhaps why these were all removed. We have here in a bag which was put out by a preservative concern in New York, the advantage of using these articles. Here is something (showing) they recommend to freshen meat—sausage, meat and pork, and all those sorts of things. It is for both coloring and preserving meat.

While looking over these preservatives mentioned in the catalogue here, my attention was called to what is known as a regular "preservarine," which is recommended very highly for cream and milk; and I suppose many of the dairymen of the State know something about it; perhaps some of them have used it. An analysis shows it to be a powdered borax, and nothing else. If any one has any further use for it, you can buy it at five cents a pound, instead of 32 cents, what these people charge for it.

Dr. Conard. Is that the article that is sold as freezene?

Major Wells. No; I think that freezene is formaldehyde.

I have here a sample of what is known as "process" or "boiled butter." By an act passed by the Legislature of Pennsylvania last winter, and acts passed in a number of other States in the Union, there is a law requiring that it shall be labeled "Renovated butter," that people buying it should know what they are getting. Doubtless, you know what it is—the lowest grade of butter picked up at country stores and similar establishments, and aerated and mixed with skimmed milk, with a proportion of about 25 per cent. of the skimmed milk, to 75 per cent. of the fat. After it was manipulated, it was

put upon the market, formerly, as creamery butter. It was accumulated sometimes in very large quantities, put through the process mentioned, and placed upon the market as so much creamery butter. I would like to have you sample this (indicating).

Here is a specimen of the adulteration of food, of what is known as cream of tartar. An analysis shows that it contains no cream of tartar, but alum, gypsum and phosphate of lime. Here (showing) is a very unusual adulteration of black pepper, made of corn starch and cocoanut shells, and very little pepper—about 25 per cent. of the latter.

There has been much discussion in the papers in regard to the United States Senate Investigating Committee, which has been having sessions in Chicago. Dr. Wiley gave his testimony there, and among other things he said that 90 per cent. of the store food is shown to be adulterated. I want to say that that is not true in Pennsylvania at the present time. (Applause.) It may have been true; I think it was true three or four years ago. In this Commonwealth those conditions have been changed. Mr. Martindale, of Philadelphia, has given the matter a great deal of study, especially as to the conditions which prevail in our State; and he says that instead of 90 per cent. being adulterated, 90 per cent. is now pure. I believe he is correct. All these samples are here for your inspection. Most of them are labeled. If you feel at all interested in the subject, I would be glad to have you examine them at your convenience.

At 12.15 o'clock, P. M., the conference adjourned to 1.30 o'clock P. M.

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## SECOND SESSION.

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Thursday Afternoon, June 1, 1899.

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The conference reconvened pursuant to adjournment, Chairman Hiester presiding, who said:

The Conference of Institute Managers will now come to order.

### CHAIRMAN HIESTER'S ADDRESS.

I have no desire to inflict a speech on a long suffering audience; but before we proceed with our regular order of business, I would like to express my pleasure at having been able to meet with this body,



and to tell you how proud I am to have been chosen to preside over the first session of the first round-up meeting of Farmers' Institutes in Pennsylvania. As was explained by the Secretary yesterday, this round-up meeting is a conference of all the institute managers and institute workers in the State. We have been called together to consider the whole question of institute work in this Commonwealth under present conditions. Now, we all recognize as a direct result of the institutes that have been held in the State, that a change has come over the farmers and farming. There has been growth; there has been improvement. If we want our future institutes to be as useful as they have been in the past, the institute must grow a little faster than the farmer; and it is to consider these questions that we have met to-day. I think, Mr. Secretary, that you have with you a most excellent body of advisers. I see here a number of men who have been connected with this work from the start, men who have been working shoulder to shoulder for many years for the elevation of the farmer, and for the advancement of the agricultural interests of the State; and it is directly due to the disinterested efforts of the men gathered in this hall that our Farmers' Institutes have been as useful as they have been. There is no State in the Union that can show more practical benefit from the Farmers' Institutes than the State of Pennsylvania. We find, as the result of these institutes, that the average farmer is reading more; takes more than one agricultural paper; he takes the bulletins that our State Board of Agriculture are issuing, and the bulletins from the Experiment Station at the State College, and he reads them critically, and he adopts from his reading a number of new methods; he has adopted advanced methods of farming, and advanced methods of feeding his stock; of taking care of his grain product, and preparing it for winter food for his stock; he has taken up advanced methods of handling the products of the farm; and best of all, he has made advancement in the cultivation of the soil.

As suggested yesterday afternoon, we want these institutes held in the future to be as good and as valuable as any ever held. It is suggested that we make this meeting not only the best institute meeting that has been held in the State of Pennsylvania, but the best farmers' meeting that has been held in the United States. I think if we all try, we can make it such. And, more than that, that we can make the institutes that are to be held next winter the very best institutes ever held in the United States. We have talent right here, and I believe that we have the disposition to do it. Now, let us all try to bring about this end.

Our Secretary has prepared here 26 questions, to be discussed this afternoon. These are all important questions. Nearly every one has suggested itself to the mind of nearly every institute manager

and worker at some time or other. He has appointed one person to open each question. After the question has been opened, we would like to have an expression of opinion from every one who has one to offer. In order to do that we must be brief and prompt, and speak right to the point; and so we ask each one to consider carefully what he is going to say, and to say it in the fewest possible words.

Mr. Herr. May I offer a resolution at this time respecting one of our institute workers?

(Unanimous consent having been given.)

Mr. Herr then offered the following:

*Whereas*, Forestry is one of the greatest interests of the State, and the work of the Forestry Commission has developed so as to arouse the people of this Commonwealth to a sense of its great importance, and to an indorsement of its work, and whereas we are already beginning to realize its beneficent effects: Therefore,

*Resolved*, That we recognize in the work of our Forestry Commissioner, Dr. J. T. Rothrock, a work of peculiar and especial value, and recognize in him a worker of wonderful force and intelligence, and in our judgment, the best fitted man in this State for the position of Forestry Commissioner, and we would rejoice to see him reappointed.

The preamble and resolution were seconded by Col. Woodward.

Mr. Brown (of York). It seems to me it is not necessary for any one to make any remarks upon this subject, for I am sure there is no one present who will not recognize the justice and fairness of this resolution. I hoped that there would be no necessity for considering such a resolution, because Dr. Rothrock's work in that position has been of such distinction and value that I did not think there was in any mind any thought of removing so valuable a man from such a field of action.

The resolution was unanimously agreed to, those present rising to their feet.

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## SELECTING PLACES FOR INSTITUTES.

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Chairman Hiester. The first question for discussion this afternoon is, "What Consideration Should Govern in Selecting a Place Where an Institute Is to Be Held?" This question has been assigned to W. H. Stout, of Schuylkill, to open.

Mr. Stout. Mr. Chairman: I have a few very brief suggestions. In the first place, I believe there should be a suitable hall or room for

the meeting, and willing helpers in the community. If I am not mistaken, it was a notorious mayor of New York who once said: "Put your money where it will do the most good." I believe we should follow that suggestion in selecting a place for an institute, that is, where it will do the most good.

How to secure attention is a problem. I frequently find in some pool room or around a street fakir, a large crowd of farmers, and it has been a question whether it would be advisable to procure itinerants in those lines to accompany the institute. In all sections there are some intelligent farmers who read, think and learn, and, as a rule, attend institutes; but they are not the ones most benefited, being on the road to success without outside assistance. It is true, larger audiences can be gathered in towns where various industries are carried on, and for an evening's entertainment crowd a hall to its fullest capacity; and in making out the report to the Department, the institute manager may be deceived with the idea that the large audience is a proof of success.

Again, I believe that the institutes should be changed from place to place in the agricultural communities, cross road villages, and rural districts, so as to reach a class of farmers who need instruction more than those more favored near large towns and centres of education. We should endeavor to reach a class of so-called farmers who exist, do not live, in localities where the sunshine of knowledge seldom reaches, but superstition predominates; where people live who believe in witchcraft, hobgoblins, signs of the moon, and who think their cattle are afflicted with the hollow horn, wolf tail, and loss of cud; where farmers drive ten miles to the market with a load of hay, to be fleeced by hay sharks.

Mr. Hutchison. Having an institute in our county, it was suggested to hold it in one of our leading towns, and I was anxious to try that. The audience there was made up simply of the country people; the people of the town did not attend. We had an elegant programme, but they did not come to hear it. My experience has been that it is a good plan to take an institute out into a section of country where you can secure a good church, and where the people are interested in agriculture. Then you will not have a failure. I will speak further on that when we come to advertising institutes.

Mr. Riddle. The question is, what consideration should govern in selecting a place where an institute is to be held, not the people we should reach. Let us confine our remarks to the question. Select an agricultural community in your county, and it will always be a success.

Mr. Smith (of Clearfield). The experience in our county is, that as the town increases in size, the institute is more of a failure. The larger the town, the more sure the failure. So we think the small



towns in farming communities should be preferred as places to hold institutes.

Mr. Sexton. Down in Montgomery county we have little or no trouble at all to secure the attendance of the farmers at the institutes; but the trouble is to secure a free hall; hence we have been compelled once or twice to go to the court house; for we feel, as farmers, that we have as much right to our court house for public gatherings as any other people. I think we have gone two or three times over to the court house at Norristown. Before going there I consulted with Secretary Edge as to the propriety of going to so large a town to hold a farmers' institute; but as we could secure no other hall at the time, excepting the large court house, we decided to go there. I want to say to these institute managers, that when we got down to hard work the court house was none too large for our farmers' institutes during the full two days. It was crowded to overflowing, and mostly with farmers from various parts of the county. Of course, during the evening sessions, the people from the town came in and overcrowded us, but gave us a good deal of music. They were ready to serve us with music, both instrumental and vocal, and we tried to interest them; and we made the people feel in that town that the farmers of the county did amount to something. In addition, I think it did us much good to go to the shire town of the county; yet the place, to go, I believe, is where the people want us, and when we can first secure the promise to turn in and help us, I think we should go to that place.

Colonel Woodward. The people must be taken into consideration when we locate it. The place to hold an institute is where the people are sufficiently interested to give a hall free of rent, with heat and light. There is no use in taking an institute where people do not want it. Where they do want it is simply a centre of agriculture—a community where they have sufficient interest to secure heat and light and a hall without expense to the local manager.

Mr. Piollet. The idea of the farmers' institutes is to educate the farmers, and not the people in the towns. We want to take the farmers' institutes where the farmers are. We have had better success in taking the institutes away from the larger towns and away from the railroads, and putting them back in the country and the small villages. There we have never had any trouble in securing churches. If it has been the custom to pay for them, I think it is all right; but there is no fund for that purpose.

Mr. Stout. I want to say in connection with this subject, that there are two sides to it. I think if I were engaged as an institute worker, as one of the force traveling through the State, I would suggest holding these institutes in the larger towns, where the facilities and accommodations are better than they are back in the coun-



try; where you do not have to sleep in cord beds, with the pegs sticking out at the sides, and where the food is brought to you on a variety of plates and side dishes. I think if I were one of the institute lecturers, I would agree also with some of these gentlemen.

Colonel Woodward. Inasmuch as every institute worker is from the country, he is not incommoded by the corded beds, and the pegs sticking out at the sides, and does not care about a variety of plates and side dishes. I can see now why our friend Stout has not been made an institute worker. (Laughter.)

Mr. Herr. I always have sympathy for the weak. The object of our institutes is not always to have a successful institute. A great big audience, a good deal of essaying, and a whole lot of dictionary matter, does not please anybody. If all our institutes were taken out into the rural districts where they need them, and where that work would tell in the future for good—if we only interested the people there, and made workers, we would start an influence that would some day amount to something; whereas in the big towns we have a series of entertainments—very little real education, but a whole lot of entertainment. Take the institutes right among the people to be reached. I remember a little institute in our county that was an experiment. We went out there, and there was some fellow who talked about the value of ashes, and one good brother was missing that afternoon. When found, he said, "I have learned something; I have learned the value of ashes, and I went straight home and got some."

Mr. B. F. Zarr. I am a citizen of this county and this town. I understand that the gentlemen are dissatisfied with our attendance at this institute, and that they think they ought to migrate to some rural part of our county. Your mistake is that you have brought this institute here at a time when our farmers are busy. Our farmers will attend your institutes at such times as they are at leisure, or when they can leave their work. You know that this is the time that corn is to be looked after; and the reason of so small an attendance of farmers is because they are hard at work. If you select a suitable time, you will have an attendance of farmers anywhere in the State. Unfortunately, you have come to our county at the wrong time. I think your county seats are as good places to hold institutes as any others. The farmer is not like the lawyer, doctor, or preacher, that he can leave his work at any time. When the weather is warm, he must work.

Mr. Hay. I would suggest to the gentleman that those who are here are farmers. They have not only given their time, but have come a long distance in a busy season, to be present and participate in this meeting. Some of us have as much to do as any of the farmers in this county, and perhaps more. They were not speaking of their

experience in this county, but of counties where they reside, or of counties in which they have been before they came here.

Chairman Hiester. The question is as to where institutes should be held, and the considerations that should govern in selecting the place.

Mr. Downing. I want to say this, that it depends greatly upon the committee; it is not altogether upon the place. Now, some of the instructors will remember that we had at our last institute in West Chester a large audience every day, and a class of people that took part in the discussions. We had a profitable meeting. Well, West Chester is flanked by farmers' associations, one on the east and one on the west; and we set our young people to work, and we older people went around among our neighbors, and exhorted them to attend that meeting. It is the work of the committee, and not so much the location.

Mr. Munnell. I think it is the place where we can do the most good to the largest number of people. We have never had any success at the county seat, although there we get our court house free. But in the country, in the churches, we do best. In selecting the place, we select where we believe it will do the most good. We change from year to year. We do not hold it too often in the same place.

Mr. Beck. I am not a member of the State Board of Agriculture, but am simply here as a farmer with Mr. McClure (of Northampton). I have a farm myself, and I have to attend to the corn; still I am here. I came almost a hundred miles to take in this meeting. I think if a farmer is deeply enough interested in this work, he will be willing to spend a day, at least, at such a conference. I think there is where the fault lies, that they are not deeply enough interested in this work.

Chairman Hiester. I want to make this suggestion, gentlemen: Be careful to stick to the question; and when you speak, speak right to the question that is asked, and do not cover the ground of someone else. We will have to limit the speakers to one speech and one minute. There is one question that is going to come up this afternoon to which we should give the bulk of the time. We are trying to work to that now. We will give the subject before the conference ten minutes more, if necessary, for the benefit of those who have not spoken upon the question. (No one volunteering to speak.)

## LENGTH OF INSTITUTES.

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The Chairman. The next question is "How Many Days Should an Institute Be Continued?" And Mr. Jason Sexton is to reply first.

Mr. Sexton. Mr. Chairman: Those of us who have been engaged in such work for a number of years past, have been trying to find out how much time we should put in in holding farmers' institutes, in going to different parts of the county, or counties; and there are quite a number of them, Mr. Secretary, as you know, that have six days allotted to them for institute work, taking in one full county; and the question arises among us who do the work as to how many days we shall hold these institutes, whether a one day, or a two days' session. In my own county we have found that the two days' sessions have answered very much the best purpose; and I am decidedly in favor, after years of experience in this line, of two days' sessions. It requires, as every one of you knows, a great amount of work for the committee to get ready to hold a successful farmers' institute. After we have determined upon the place, and secured the hall, we want to get things arranged so as to do the most good possible; and it seems to me, and it has been the conclusion of other institute workers in our end of the State, that the two days' sessions are the most profitable; because we have learned that on the first day, or the first session, we hardly get our farmers together, and get them interested so that they will take an active part; and about the second or third session, we get them to work. Then, when we do not hold a second day's session, having got them interested, we find that we are ready to wind up the institute. While, on the other hand, if we hold a two days' session, and we commence, as we are doing now, under the direction of the Director of Institutes, the first day, immediately after dinner, we find that it has been the most successful manner in which we could hold our institutes; because we open in the morning, excepting in some localities, and it is a pretty hard matter to have the farmers get there before half past nine, while we know that they will be on hand after dinner, all arrangements having been made for the day, including the milking of the cows in the evening; and they will remain until the institute is over, which we want them to do. They will go home from the institute that night with some new ideas—some new thoughts—and they will be ready to come back the next morning, whether they got much sleep or not. We find that the farmers' institute workers will be so much interested

the first day that they will come back, and remain right along the next day until nine or ten o'clock in the evening. Hence, I advocate the two days.

Mr. Kahler. My experience is similar to the gentleman who has just taken his seat (Mr. Sexton). I am very much in favor of a two days' institute. I think we can do a great deal more work in that way than we can on the one day plan. I do not want to take up the time, more than to second what he has said. I think it will be a mistake, as a rule, to limit an institute to one day.

Mr. Critchfield. I do not want to take up the time with discussion, but will give my experience—and perhaps it has been more extensive than that of some others. We have tried five and three days, and two days and a half. The last season we had a five days' institute, instead of two and one-half days in each of two places, and we found it worked very well. I think we did better than with a two days' or a one day institute. We started with a five days' programme, and we carried it through without seemingly any lack of interest; we had a large attendance all the time. We usually have a large attendance in the court house at the county seat. We found no trouble in keeping up the attendance and interest during the first days. We made it very successful, though it took more drilling and teaching than the ordinary institute with lectures. Notwithstanding we carried out the whole of the five days with increasing interest, on consultation with our farmers at the close of the meeting, we found that they were nearly all of the opinion that they would rather have a two days' institute. They felt that they had had too much in one institute.

Mr. Clark. If this applies to us, it is impossible to hold an institute in our community. The farming section of our county is especially at the outer points where we have the best farming lands, and where the best agricultural work is being done. To go to these points we find there is an average limit, that it is about only one day that men will go to an institute; but where we have any difficulty in traveling, two days is the best. But near the railroad, where we can be transported quickly, then we can do about as much in one day as two days at other places; and we can reach more people.

Mr. Critchfield. In Westmoreland county, when they take you from one point to another, the man takes extra single-trees, so that when those in use break and fall into the mud, they won't have so much delay in finding them and putting them on.

Mr. Clark. It depends on whom they have to carry, whether they break down or not.

Mr. Heyburn. The first thing is to start out right; the second is to keep the interest up to the end. Secretary Edge, when we first inaugurated the institutes in our county, suggested that we start



our institutes with two days' sessions, as it might take the first day to get the people interested. A suggestion was made to us also to start our institutes with two brass bands. We found that the two bands made too much noise. And then we had the school children, with two days' sessions in each place, and four days in our county. We commenced in the morning with our school children, awarding prizes for the best recitations, and found that we immediately got the interest of the parents, and then we had a large attendance in the afternoon. We have a good attendance of the parents, who also help us, as well as the teachers; and our institutes were larger the last term than ever before.

Mr. Stout. Do you allow your teachers for the day, or do they lose that day?

Mr. Heyburn. We allow them for the day.

Dr. R. P. Heilman (of Cameron). In regard to the one or two days' institutes, it seems to me it is a good deal a question of location. We had one day at one place, and two days at the other; and we had just as good an attendance at the one day institute and as good an institute as at the two days' session. If we had continued the session for two days at the one day place, it would have been a failure, for the reason that the farmers had a good distance to come. The distance was too great to make the trip twice; and they would not come and stay all night, because their work at home required them there. So there are places where the one day would be an advantage, and other places where it would be better to have a two days' institute. It seems to me that the location ought to be taken into consideration.

Dr. Conard. My experience has been a little varied. We have had the best success in our vicinity, and in our county, with the two days institutes, with two night sessions, making up a programme for the last night's session largely of home talent, so that the speakers could get away, particularly if it happened to be on Saturday night, when they want to get on to the next place. Last year we were allowed seven days; and in order to have the one day institute successful, we made a programme for the one day, so as to include as much as possible a two days' programme, and it was the greatest success of any in our county. We were, however, drowned out at two of them. Our experience has been to have the institute proper begin with the afternoon session. It has been more successful.

Mr. Rodgers (of Sullivan). We find in our county that the one day is a failure, or has been in the past. My predecessor has tried it; and we have gentlemen here who will bear me out. As soon as we established a two days' institute, we had a success of it. Therefore, I would not recommend one day institutes.

Mr. Brodhead (of Susquehanna). Mr. Chairman: In my county we have a success of one day institutes. We had five one day insti-

tutes last year, and one two days' institute. I think the one day institutes did more good than the two days' institute, or the same amount of good. I think you can reach more people in that way.

Mr. Peck. In my experience conditions must control. In my county, with one day at a place, we had an average attendance of 100 to 200; and at the others between 400 and 500 was the average. I think two days' institutes would be right for a part of the county.

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## HOW TO ORGANIZE FOR A SUCCESSFUL INSTITUTE.

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Chairman Hiester. "How to Organize for a Successful Institute." Hon. Gerard C. Brown has the floor.

Mr. Brown. Mr. Chairman: The object of our work is success; and the success of our institutes, I think, very largely depends upon the thoroughness of the preparation which is made for them. The burden of that work falls upon the representative of the Department of Agriculture who has charge of the institutes; that is, on him is the initial responsibility. The Department, by its valuable suggestions, and by the great assistance which it has been giving to the assistants in the different counties, as employing workers to prosecute the organization of institutes, is doing it with a great deal more ease and satisfaction and success than in former years. We all learn by experience. And it seems to me that one important thing in the organization, as it exists at Harrisburg, the head of the department of institutes, is the fact of the wonderful concentration and crystalizing among the representatives and the workers throughout the counties, the results of experience, and the beneficial results resulting therefrom, to many sections, not confined to our State, in regard to these matters.

In regard to the organization of institutes, I would say this: The county manager must be satisfied of one thing, that nothing will come to him without some labor. He cannot stay at home and simply direct or appoint institutes here and there, etc., and expect that the people of those different localities will do all the work. A county manager should be sufficiently acquainted with the people of the county to know two things. He ought to know, in the first place, what are the needs, and necessities, and wants of the people of the different people of the different sections; and he ought to know the different people who will co-operate with him, and are the most willing and able to have a success at that point. The first object then, should be to pick out his lieutenants, or his local men, and get them to work,

I have had the honor of conducting institutes for the Department for several years, and I found that my utmost efforts would have been of little avail, if I had not succeeded in getting the particular sympathy and co-operation of the leading representative farmers of the district. Now, these men, by the local influence that is exerted all the time, can work up an amount of interest which will secure more than anything else that I can think of the promise, at least, of a good attendance at these institutes. Of course, in regard to the success, I have nothing to say. My idea is, in selecting these men, to try to select some good men from each township, or each locality, in the vicinity of the place where the institute is to be held.

I believe in having this committee selected some time beforehand. I believe in informing them, as to who are the members of the committee. I believe they should be encouraged to hold a meeting some time before the institute is to be held. I believe then in a thorough organization there of this local committee; and there talking over and selecting the persons whom they know will take part in the proceedings. The State speakers give a great deal to institutes, and we can run institutes solely by their work; but institutes are successful in accordance with the amount of interest they create in the particular locality or place where they are held. I believe it is the duty of the county manager to encourage the farmers, and their wives, and daughters and sons, and all who take an interest in the educational interests of agriculture and its progressive development, to take part; so that in neighborhoods where success is to be looked for, there is need of thorough organization on the part of a goodly number of farmers and their families.

I agree with my friend who has spoken in reference to the subject, that institutes ought not to be held too often in one locality. I think in a large county it should be farmed around. The only feature I have been called upon to criticise is, that the committee seeks to place institutes where there is no postoffice.

Colonel Woodward. No; You did not give us the names of the postoffices.

Mr. Brown. No; the Pullman car did not run up to the door.

Colonel Woodward. In other words, the roads were so muddy that we could not get there.

Mr. Brown. No; we have piked roads. While they growled at me, they did so with the very best of humor. Of course, I thought they would be satisfied with the fact that it was interesting and successful, because they went to where the people were. We had institutes in York two or three times, where we had the smallest institutes we have had in the county. I do not know that I ought to say anything more, because I want the result of the experience of my co-workers.

Colonel Woodward. I am glad to be able to state to my fellow workers that our county has successful institutes. Our plan of work is something like that of the Senator's (Mr. Brown). If our workers make a pledge to meet State workers, they will get there, and they do not fail to get up in the morning in time to get there, as they do sometimes in York.

In the first place, we fix the place and dates. Then we send out notices to the prominent people, of whom Senator Brown has spoken, of each locality, calling a preliminary or organization meeting. Then I take the trouble to go to that meeting; and have usally from 25 to 50 people at organization meetings. At these meetings the entire evening is spent in discussing a plan from one end to the other. The whole institute business is gone over, and committees appointed on building and decorating, upon music, and upon entertainment and advertising. It is not continually putting off until to-morrow, or "I will help you, when you get up."

Mr. Hutchison. No.

Colonel Woodward. And those committees are carefully instructed in regard to their duties, and watched to see that their duties are well performed. I think these preliminary meetings are the only practical way to accomplish a first rate, wide awake, live and successful institute. It is the universal testimony of people who come to us that we have the very best that can be had in the State. I think that is the secret of it. I think Senator Brown is right in that respect.

Mr. Brown. Mr. Chairman: I want to say that I think I am slightly acquainted with the county manager who did not get to the train at the time the State workers arrived. I think I have heard of him. I believe it was on the coldest day of last February, when the thermometer was nearly 30 degrees below zero; and, if I am correctly informed, he drove 20 miles and got there before the lecturers arrived by railroad. (Laughter and applause.)

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## ADVERTISING INSTITUTES.

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Chairman Hiester. We will now pass on to the next question, "How Shall the Institute be Best Advertised?" Mr. George G. Hutchison.

Mr. Hutchison. Mr. President, Ladies and Gentlemen: I was very much afraid that Brothers Brown and Woodward were going to get on this advertising of institutes. The two questions are similar.



The success of an institute depends largely on the advertising of them—in letting the people know that you are going to have an institute in that section, and at the time you may have decided upon. The first thing is to get out the advertising. The way that we do in our section, we use the posters that are furnished by the Department of Agriculture. After they were furnished, I had the dates and places printed in them and the posters posted over the county where the institute was to be held. On that poster we mentioned the different subjects that were to be discussed, and the names of the State speakers. When I had them printed myself, I always had in conspicuous letters the names of the distinguished speakers. We like to get the names of the distinguished lecturers from other counties in the advertisements as well as on the posters, and they will draw a crowd when they come. I remember at one institute we got the distinguished gentleman from Somerset (Mr. Critchfield). One of the obstacles to the success that day was a fierce snow storm in the morning; but we drove to the church, had a fair audience, and a very successful institute, and I attribute it to having it well advertised, with the name on all the advertisements of the Senator from Somerset.

Now, you get your interest first in the movement from these posters. Next, you want to get all the papers in your county interested in the institute. That is not hard to do. You must get your programmes printed in the county. If you favor one as against another, they do not like it. I prepare a good programme, and have it furnished to the county papers. I aim to send programmes to all the leading farmers in the section where the institute is to be held, and also to all the newspaper correspondents in all the districts. We are located near Centre and Blair counties. When we have an institute near the Blair county or the Centre county line, we send to the papers in those counties; and we are patronized largely by the people in those two counties. The people have their home paper, and read over the programme, and become interested in this way.

But there is another way, which I think is very successful; and that is to send postal cards to the people in the township. The institute does not reach out to more than about three or four townships. Some few may be scattered over the county. But I send a postal card to every farmer in that township, and in two or three or four townships around. On that card is the advertisement of the institute. They are furnished through the Department. On these I call attention to the different subjects, on what days the institute is to be held, and I mail one to each one of them. In this way it is brought to their personal attention. At this time the Department furnishes these cards, and about upon the same system that I have mentioned. Then, I advertise in advance of the special programme. We have special programmes in the evenings. I think that brings out the

people. They get tired through the day talking about bacteria in milk and crimson clover, and these various subjects, and they want something in the evening to interest the people generally. I have had educational meetings, and I have had distinguished gentlemen, a couple of lecturers, with recitations and music; and, as the gentlemen who have attended our institutes know, I make them as entertaining as possible; and we have no trouble at all about drawing a crowd. I think it gives the institute as good advertising for the next year as we can have. Having a successful institute, the people will look forward to the next year to attend another, and in the meantime talk about that special programme. Through these means I have been able to make our institute a success.

Mr. Oliver. In addition to what the gentleman has done in his county last year, this was done in Crawford. We had our programmes printed quite early. We all know that persons like to be addressed personally, and so we have sent them a programme something like two or three weeks in advance of the institute. Then a local sommittee-man has sent to the newspapers, within a certain radius of where the institute is to be held, stating that it is expected a representative of the paper will be in attendance at the institute; and with the communication, a programme, asking the editor to print it as local news. In this way Crawford county has been quite successful in having a large attendance at the institutes.

Mr. Hutchison. Just one word more, and that in reference to the Patrons of Husbandry. We send notices to the Masters and Secretaries of the local Granges in our county, and I get them interested in the institute work; and they have been a great help to us.

Mr. Hildebrandt. We get the programmes printed early, and we go around to the school teachers of the several townships, and ask them how many families are represented; and we give each teacher one programme for each family, in addition to what are wanted by the teacher.

Colonel Woodward. Mr. Chairman: I do not propose to speak on every subject this afternoon. We first publish and send out, as soon as the date is fixed, a notice of the time, in order that singing conventions and other matters may not be fixed for the same date. Then we have our posters printed, when the proper time comes, and have them in some unique form; for instance, sometimes in one long piece of paper. I do not use the posters sent out by the Department, for the reason that, in my judgment, when a poster is sent out with a blank place, and a blank date, the reader judges that it is a cheap affair, and the people are not interested in it. Therefore, I print special subjects on special programmes we have printed. All this matter is sent to the committee six weeks or a month beforehand; and letters are sent to

them frequently, to see that they are properly posted. Then I have my programme printed the common width for the newspapers. Then display it upon the programme, and put a head over it, with the time and place, to make a programme circular, and sent it about. It is a temptation to put it in the newspapers without re-setting; but it always goes in full and complete. If there is more than one newspaper in the same community, the printing is done between them. When the programme is properly prepared for one paper, and that paper publishes it, another publishes it as a matter of enterprise. The editor of the other paper sends over for it. Thus every one of the papers publish it, and often it does not cost us anything.

In addition to that, I use the postal cards sent by the Department; and I have postal cards printed in addition to those sent by the Department, with the names of the county committee printed upon them. Thus through the advertising of committees they are distributing their work. To each of the teachers in the township, and the adjoining townships, is sent a personal letter; and enclosed in that a programme, with the request that they shall put up anything in the school house that comes to them, that the pupils may all see it. This makes up so complete a success in the way of advertising, that I think it is one reason of the success we have in attendance. One is sent, stating that another will be sent later, with the request to put up, or distribute them both. They have their patrons, and influence. I send them not only to the school teachers, but to the blacksmith shops and stores, and every place where people gather, within ten miles of the place, each with the request that after reading, they tack it up; so that very many coming to these places of meeting in the ordinary affairs of life, a large number see these notices.

I believe absolutely in thorough advertising, and making it personal and direct; and that is my reason for not using the blank posters sent out by the Department. It has a depressing effect in my view, from experience, as it carries out with it the idea of being an ordinary affair. I know when I see advertised some exhibition or show that may come to my place, with the name, place and date printed in blank, I think it is a cheap affair, and I will not go. While it saves expenses, I believe it is not so effective; and I prefer to pay the money for the special advertising which I have adopted, and which I use. The initial work that I referred to awhile ago, and the advertising that I do in this way, are the reasons for the audiences we have in attendance, and the results that we have of great good, all growing out of the holding of these institutes.



## INSTITUTE WORK AT HEADQUARTERS.

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Secretary Hamilton. I just want to say a few words right here.

I regard this as the key to success. Wherever we have a manager of institutes who does it as thoroughly as Colonel Woodward—giving his personal attention to it; using his own time as he does—we always have a good time, and usually good institutes. But where a man uses the machine methods and expects to sit still without doing anything, we nearly always have a failure. We found we had failures in some localities, and had blanks prepared, so that the local manager could put them out, and the people know something about the proposed institute. These general posters are not the best form, but better than none; and we send 6,000 or 8,000 out every year. You will also notice in the blank reports of the institute which are sent to the general institute manager to fill out, a place not only for the lecturers, and for the local managers of the county, but there is also a blank space for the names of prominent agricultural people in that community. I had a good deal of difficulty to get some of our managers to understand that this is an important part of their report. And the reason it is important is, because every one of those names is transcribed into a list and used in advertising the next institute. I have the names of several thousand of the best farmers in Pennsylvania in my office. We have established the practice of aiding the institute workers of the State by sending out 6,000 or 8,000 special notices to individuals about two weeks in advance of the arrival of your lecturers. It is done to insure that advertising is being done. But if the local manager will also give his personal attention to a duty, we find that the institute is sure to be a success.

We have, in addition to this, attempted to make use of the public schools, and have corresponded with every county superintendent in Pennsylvania, and have the co-operation of every one of them. About two to four weeks in advance of the institute that is to be held in the county, there goes out to the superintendent of that county a personal letter; and enclosed in that will be anywhere from 25 to 50 letters addressed to the teachers in that county, all done up in envelopes, and stamped, ready for the postoffice address, with the request to the county superintendent to affix the proper address of the teachers in these various communities, and have the letters sent to them, calling attention to the institute that is to be held in their locality, giving time and place; also calling attention to the fact that there is to



be some educational feature connected with it. The school children are asked to be present; and they are asked to tell the parents to come also. A letter is also addressed to the teacher, inviting him or her to be present and take part in the proceedings. In that way we are advertising the institutes of Pennsylvania outside of the managers. In several instances, had it not been for these teachers, and the children, and the ladies, mothers and sisters, the results would not have been as good as they were. I had hoped that we would get through all the institutes without a single failure in Pennsylvania. The fact is that last winter, by actual count, we reached over 50,000 people in Pennsylvania in our institute work. (applause.)

Mr. Clark. It seems to me of interest right at this point to say, in reference to the advertising, that I have no trouble in our own county with our editors to have them publish anything we wish them to do. They are willing to follow us up through their reporters; but they do complain that we do not give them our poster printing to do. They say, "you take this away from us." They are willing to do the printing in the papers, if they get the circular and poster printing in return. If not, I tell you, they are against us. We must have the good will of the printers of the county to have a good institute. I suggest this very kindly, but it comes so forcibly, I thought it proper to mention this at this time.

Secretary Hamilton. In answer, it does not cost you a cent to get these posters; and it does not take a cent out of your institute fund to get them. You can get them any time they are wanted, without expense to you.

Colonel Woodward. I appeal to the institute workers not to let the splendid showing that the Department is making, cause them to be lax in any way; for the Department may follow with literature *ad infinitum*, and yet not accomplish the object intended. I did not know that the Secretary was doing this. The effect of the advertising is largely with the local manager. You must see the necessity, and work accordingly.

Mr. Eves. The man who is going to hold county farmers' institutes must subscribe for every paper in the district, and then he is ready to ask for articles, or ask for items in regard to his institutes. If he is not a subscriber, he has no right.

But I did not rise to speak of this. To advertise the institute, you should make the programme so interesting that it will be of interest to every one in the community. You want to make known the distinguished speakers. Then, you have noticed some children that have ability, or some lady; and nobody else may have noticed it. You put the name of that one and this one in the circular; and instead of sending the stereotyped postal card, just send a programme.

The Chairman. This is not on the programme, but on the advertising.

Mr. Eves. If the people have interest, or they see that there is going to be something a little out of the usual way, they will be more likely to attend. The naming of the topics and the individuals, all has weight, each individual having a circle of friends.

Dr. Conard. I would like to know whether it is deemed advisable in some localities, to have the institutes held under the auspices of Granges or farm clubs?

The Chairman. That is another question, that comes up later.

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### LOCAL SPEAKERS.

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The next question on the programme is, "Should Local Speakers Be Secured; and, if So, in What Proportion?" To be first answered by Mr. S. F. Barber, of Dauphin county.

Mr. Barber. Mr. Chairman: The question is, "Should Local Speakers Be Secured; and if So, in What Proportion?" I think they should be secured; but I think that depends largely upon the location. In my own county, I think, it is well to have one or more local speakers. In other localities that I have in mind, I think it would be well to have half of the speakers from the community. Each institute manager must be governed by the talent that he can command. I believe in getting in all the new people possible.

Mr. Clark. What do you understand by this question, "local speakers?"

Mr. Barber. Home talent.

Mr. Sexton. I believe it very important, indeed, to secure as much home talent as possible. I believe if we have an average attendance of about 50 members of our local organizations, including those from our several subordinate Granges in the county, we can have the necessary home talent. We deem it very important in our county to secure a very large proportion of local talent and local help upon the programme. Our people now rather expect it. I am sorry to say, that there have been times when we had to somewhat crowd out the visiting talent to give the local talent a chance. I am decidedly in favor of employing home talent upon all farm topics, wherever we can do so; because we get our people interested, and ready to take up the work advocated in our meetings.

Mr. Cooper. I want to endorse what Mr. Sexton has said. In

every district there are men who have many friends. Some good local managers, who are successful men in their district and have plenty of friends, by their co-operation, they will bring their neighbors with them. Wherever I have secured a committee of four or five—not exceeding five—I have always had the very best meetings; and, as some of you know, among the largest that have been held in the State. To the local talent is ascribed largely this success.

Mr. Stoughton. Mr. Chairman: Mr. Riddle left this part of the institute work in my hands. On calling our people together, we talked the matter over as regards our local talent; and we include one now about as much as the other. But we want those people to obey our instructors, and to have it understood that our instructors are not there only for us to entertain them; and, as Senator Critchfield, Mr. Burns, and Mr. Herr, know, who were there, we try to hear them on nearly every subject; and we gladly heard them on every subject they were listed for, so that we might learn from them; and when they were gone, we discussed the speakers, and the valuable instruction they gave us.

Mr. Stout. I believe these institutes are a school, and should be conducted on the same principle. These superintendents generally, when they go around, do not recite to the school, but let the school recite to them. These men are sent out largely as superintendents of schools. I believe the local talent should be listened to and instructed from year to year, and that each year the lessons should be a little bit harder. The members that are sent out by the Department should act as superintendents, to instruct, and hear lessons from the scholars.

Colonel Woodward. As a representative of the State speakers, if I should be so fortunate as to attend the next course of institutes, I should require every one of these managers, to whom I was assigned, to live up to his doctrine; because if there is anything that we like, it is to be put in the back corner, while the local talent do the talking. (Applause.)

Mr. Brosius. I think this question of local and State speakers may be a little delicate to speak upon. I would say that there should be good judgment used. The State speakers who come to us in Lancaster county have been very entertaining men. I am not saying this to flatter them; but they bring a class of information to us that we have not got. Therefore, they are employed by the State, and sent out by the Department, to convey a special kind of knowledge. Now, we are glad to have them with us. While we are glad to be entertained by the children, and the talent that we have, we want to have the knowledge that we do not get through the schools and the colleges. The State talent bring knowledge to us, and throw out hints that in our practical, everyday life are of immense benefit to us;

and I want the State speakers to come to us, and we will try to treat them right.

Mr. Munnell. While I think it a good idea for local talent to be secured anywhere and everywhere that institutes are to be held, yet this State Department has been sending out State speakers who are qualified, prepared and educated, better than our local talent. They have been sending out the scientific men. We have never had any men sent to Mercer county who were not well prepared for their business. We could not very well conduct an institute without them. Consequently, I think that in preparing a programme, we should be careful to use State speakers on all question that are scientific, and also to use the local talent where it can be made available. We have every year men who can speak on different branches of the subjects assigned to them. They have prepared themselves; and we have no men at home who can speak as they can. Consequently, we cannot use them; and I would use the State speakers very generally in preparing the programme. Then, also, use the local talent—ladies' essays, farmers' essays, and recitations by children. Let them all be printed on the programme. Therefore, in preparing a programme, I would suggest that we use both foreign and local talent, and we will probably get more information.

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#### SPECIAL SESSIONS FOR SINGLE TOPICS.

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Chairman Hiester. The next question is, "Should There Be Special Sessions Devoted to a Single Topic?" Mr. Northup, of Lackawanna.

Mr. Northup. Mr. Chairman, Ladies and Gentlemen: It is said that you cannot have too much of a good thing, if it is only good. Jacob Lego, a famous writer in the Farm Journal, said if it is a good thing to plow, it is better to plow deep. And so some plowed down deep, and the result was a failure. In Lackawanna county we have a farmer, who, at 70 years of age, thought it was a good thing to enter politics, and his farm began to run down very much. In our county they drink beer. You may think, "I see some indications of that this afternoon." (Laughter, the speaker having a ruddy countenance, but evidence to a close observer that he lives a strictly temperate life.) This old gentleman went around with the committee and the candidates; and instead of drinking beer, he drank soda water. In this way he traveled around different parts of the county. Finally, the old man said, "I tell you, I've got enough of this soda water."



(Laughter.) Now, it may be that the farmers' institutes may have too much of one thing. I am not going to speak in the negative on this subject this afternoon, to start with; but I claim, under the circumstances, it would not be best to have just one topic. If you were to have only one topic, and that on some special subject in which all were not generally interested, you would not have a full attendance. If you were going to talk upon a fertilizer question, you would not be likely to have the young ladies. And if you knew what a hard job it is to get young ladies to come into the institutes of Lackawanna county, you would say, by all means, have a diversity. In order to get them to come, I thought the best thing to do first, was to get my wife, and may be we might get some more of the ladies. But she rebelled at first. When we came to town, she declared: "I'm not going to be the only lady at the institute." So I said "You go over to the store. If there are any ladies at the institute, I will come for you." I went to the institute, and they were sitting all over the room, a number of farmers having come to town, but there was not a lady present. Finally, I saw a lady peeping through the door. Then she ran down stairs, and I ran after to catch her. (Laughter.) Of course, I knew the lady, or I would not have run after her. (Renewed laughter.) I told her there would be another lady there if she would come into the institute and wait a little while. In this way I soon had two; and then, after a while, we had a number of ladies present. There would be ladies there, especially if there were going to be a ladies' topic discussed. We had better be careful how we do it; but it is better to have a topic for ladies. We might have the subject of butter taken up, and have an expert in that line to discuss the subject fully, as we have had sometimes. But we cannot always do that; so we have to adjust the programme in accordance with the circumstances and the situation. I tell you, if there is any fellow that feels the responsibility of having a successful institute, it is the manager; and when it drops off the first night with an entirely successful day's session, he sleeps soundly. But when you make up the programme, be careful how you put one topic in for one whole session, to interest the people and have a profitable institute. For, of all the miserable failures that happen in a county, it is a farmers' institute failure. It makes a man feel as if the farmer did not amount to anything and that his business is a failure. But if the men are interested, as well as the county papers, and the judges of the courts, how it does lift a fellow up. It makes him feel as if he were almost a Washington. (Renewed laughter.) If you want to make an institute successful, be careful how you devote one whole session to one topic. Let the people all become interested; and when that is the case, I have never known an institute to fail. (Applause.)

## WOMAN'S SESSION.

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Chairman Hiester. I think Mr. Northup did full justice to this question, and we will pass to the next: "Should There Be a Woman's Session?" Mr. C. B. Hege.

Mr. Hege. Mr. Chairman: I could answer that question satisfactorily to myself by saying "Most emphatically we should have a woman's session." We heard from our good brother the effect that women have in an audience. I venture to say, that if this side of the house was filled this afternoon with ladies, that the other side would be filled with men. Now, we bring farmers' institutes into a neighborhood to educate the farmer; and the farmer's wife needs education as well as he. But the question is "how to get them there?" The good brother told us how he got two women to attend his institute. I will tell you how I got women to our institutes last winter. I took the liberty of putting two young ladies on the programme at one of my institutes. When the programmes came out, it was talked around that so and so was on the programme to read a paper at the farmers' institute. It was talked of among the young ladies' friends, and we had quite a number of young ladies. We found that we can get the mothers there, if we can get the young ladies to the institutes. When a young lady reads a paper, the mother always wants to hear it. The boys and girls also want to hear the paper read by some young lady of the community. I think in that way we can get ladies to the institutes, by having a ladies' session.

Chairman Hiester. This is a subject that hardly admits of question.

Mr. Critchfield. I believe that our institutes ought to be so managed that every body will feel it is everybody's meeting, and that every session belongs to everybody. Now, I do not want my wife to feel that there is any part of the home that belongs to her especially, or to me especially; but for her to feel that it belongs jointly to us. I want in the institute precisely the same feeling, that it is ours. I believe if the women could understand that it is as much theirs as it is the men's, and that whatever is proper for the husband to attend is proper for the wife to go with him, I do not think there would be any trouble.

Mr. Eves. This is a question that has always been met satisfactorily with us, and we have had well attended farmers' institutes. This is the first county that introduced the ladies into the institutes

by giving them their full names. Instead of "Mrs. Bowman" or "Mrs. Eves," our Secretary says, "Put in the initials of their names; don't say 'Mrs.' " It was the first county in the State where the women were so recognized, and it has led to successful results.

Mr. Lighty. There is no session that is attended better by the young men of the community than the ladies' session. If we abandon the ladies' session, we cannot reach these young men.

Mr. Hildebrandt. We need the young ladies as well as the young men. We need the wives as well as the husbands; and the mothers as well as the fathers. I think the institute is for every member of the farmer's family.

Mr. Beardslee. In our county the ladies have had a session in a church as large as this room, and whole families came out to that institute. That church was crowded through the two days' sessions, and fully one-half the attendance was of ladies. Now, you want to encourage that condition of things without any question in the different institutes of the State. Then ladies will make their appearance and carry on the work as it should be. Give them their part, or their share, and their importance will be made manifest.

Mr. Seeds. I have great respect for the ladies. My mother was a lady; and I had the good fortune to get a woman for a wife. (Laughter.) I have attended farmers' institutes where they had a lady in the chair, and a lady secretary. The ladies conducted that session, and did it very courteously and beneficially, not only for the ladies, but for all present.

Mr. Critchfield. Of course they can be induced to attend, and there should be a ladies' session. Why not leave them to transact the whole business from beginning to end? In our court house, at some of the sessions of the institute, there are just as many ladies as gentlemen. I went around over the county, and said, "Will you not take this place on the programme?" And they consented. The people of that end of the county wanted to go because Mrs. Smith would take part; and Mrs. Brown; and so the ladies came in from all over the county, and the house was full.

Colonel Woodward. If we all had wives who were better talkers than their husbands, as the Senator has, we would all agree with him.

Mr. Biggs. We are in the habit of having ladies' sessions conducted by ladies.

Mr. Burns. May I ask for the privilege of speaking? I would like to say that in our county we could not hold institutes, if it were not for our ladies. The women take as much interest as the men. We always give the ladies about an equal part of the work; and we have found that they have carried on their part just as successfully as the men. We would not think of holding an institute without

their assistance. We feel that we are in duty bound to give them a portion of that meeting as theirs. We have been in the habit of giving them one session, and allowing them to conduct it as best they could. Of course, they always ask the advice of the men who have it in hand. We think the ladies' sessions have been entirely successful in our county.

Mr. Critchfield. I would like to ask you why you could not make a lady chairman of the meeting just as well as to have a man? And let her preside during the two days of the institute?

Mr. Burns. I do not know the reason why, if we have women who would make suitable chairmen.

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### A LEADING TOPIC FOR THE ENTIRE STATE.

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Chairman Hiester. "Should There Be a Leading Topic for the Entire State?" Mr. C. L. Peck.

Mr. Peck. Mr. Chairman: I notice that this is in the singular number, "a leading topic." Of course it follows without the saying, that unless it be a topic of paramount importance, that applies to every section of the State, the answer would be, no. But as I have been brought in contact and mingled with the people of my own county, and in contact with the farmers of the different counties of this Commonwealth, I have become more and more impressed, that there is one topic that should be made a special topic in every section, and that topic is the farmer's home. There is no one topic that is of more importance, and along which there is a greater need of instruction, than along this line. I think, I can say, that I am reiterating the thought of every man present, who has been placed in a similar position. I can remember the first time when I went to the village, and remember the boys of the town, who were born there; and then, looking forward and calculating the kind of business that we should get into; and every one of us, without a single exception, was figuring on some kind of occupation where we could enjoy it as in the village, where the houses had shaded fronts, and were painted white, attractive with flowers, and with tidy walks; and it never dawned upon the mind of one of us who lived on farms, where we didn't have any, that shade trees grow just as well about a farm house as in the village, and that the sunshine was just as conducive to both plants and flowers as we saw them in the village home; and there are so many on the farms of the State of Pennsylvania who have



never tried to change this, and never cared. And I think these and other facts pressed upon the farmers of this Commonwealth, will increase the love for the farmer's home more than anything else; that it is the power which will raise us up again, and lead our children to have a greater desire to remain on the farm.

Mr. Herr. I rise to a point of order—That the gentleman should not get upon other questions than the one before the conference.

Mr. Peck. I am sorry that my friend cannot appreciate that topic as a general one for the entire State.

Mr. Eves. He does not know what a home is. (Laughter, Mr. Herr being a bachelor.)

Mr. Peck. Have this representation of the farm impressed upon the farmer's boy, and you will retain upon the farm the bright boys who are seeking vocations in other localities. I think this topic should be made prominent up in northwestern Pennsylvania, as well as elsewhere. The banker, when he closes the bank, leaves his business; and so does the merchant, and the follower of every other vocation, excepting the farmer. When the farmer can be made to do that, and bring social life into his farm home, he will have done more than any one in any other line in protecting agriculture, and lifting it to the level where it belongs. The topic of the home can be introduced all over this Commonwealth. I would make it one of the topics in every institute. (Applause.)

Mr. Piollet. I believe this is a very important question. I think the subject that Mr. Peck has suggested is also a very important one. There are other topics that I would like to see discussed in this State. I would like to have the farmers form an opinion generally, and have it go to our legislature, on the taxation question, or the question of taxation as it affects the farmer. (Applause.)

Dr. Heilman (of Cameron). It does not seem to be the point, as to what the subject is; but should there be one subject that we should all consider? Now, there might be several subjects suggested. It seems to me if all over the State we should think of that subject and discuss it, the institute workers traveling from one place to another might have something that this locality or that would not have. It would certainly have an influence all over the State, and on every one who would consider it. It is not what subject we shall take up, but should there be some one subject? It seems to me we would all arrive at one conclusion in regard to it, if all considered the same subject.

Mr. Thomas. I simply rise to endorse the question presented by Mr. Piollet. I think we should have the topic discussed at every meeting of farmers, whether an institute or township meeting, or what ever it may be. It is a question of more importance to the farmers of Pennsylvania than any other subject that they can discuss;

and it seems it is not discussed as much as it should be. I think the farmers do not understand the situation in which they are, or they would not question it.

Mr. Lighty. I believe in specialties in all lines; and I really do believe that if the institute managers would specialize along certain lines over the whole State, more good could be done in any particular line than in any other way. If all the speakers should concentrate their thoughts, the whole agricultural population would be more elevated along that certain line, and it would permeate agriculturists of the State in much quicker time than if scattered over many topics and on many lines.

Colonel Woodward. With the present condition of this great State, there are no topics more interesting, possibly, than the two mentioned here to-day, that can be discussed profitably in every part of the State. There can be no more important subjects discussed than these. On various subjects, as coal mining, there may be as much difference as day from night; excepting, possibly, the two that have been offered, that can be discussed at the same time in every community.

Mr. Piollet. We do not raise any coal.

Mr. Smith. How is it about the road question?

Colonel Woodward. I might add that to the others.

Mr. Philips. There is no question but what Mr. Woodward is right. Any of you who have been engaged in institute work know, that it is absolutely impossible for a corps of three men who are sent together, to equip themselves for every difficult subject that comes up. The idea is variety; to send experts, each in his own particular line. Now, if we devote one session to one topic, it devolves upon one man to conduct that whole session, particularly, if the local talent does not help him out.

Now, there is one of these questions which I have studied much. It is local taxation. And when that topic came up in a local institute, I occupied the floor for an hour at a time, because there was no one to take my place. In every institute this can be discussed, because in every corps of workers one or more has that topic in his line. He can devote as much attention and time to it as that particular institute wishes to hear. I speak from my experience that it would be ill advised to devote a whole session to the topic of taxation, if the people of that particular locality or institute do not want to hear it.

The Chairman. The question is, "Should there be one topic?"

Mr. Piollet. It would not be necessary to devote one session to the discussion of this one topic.

Mr. Philips. That is the question.

Mr. Piollet. That is not the question. It should be, whether one

topic for the whole State. It is not necessary to take up one whole session in discussing this question. But I am quite sure, if we undertake it, and get started, that it would take a whole session, and we would be fully entertained in doing so.

Mr. Heyburn. I want to say a few words on this subject. While Pennsylvania is an empire, it is in debt, and the farmers have got to help lift it out. Suppose every farmer took up the subject; it would inaugurate a grand movement. I think it is a topic for the whole State to discuss and dispose of.

Mr. Brown. As I read the question, it is, should there be a leading topic?—Should there be a leading topic for discussion throughout the State? It seems to me, since this question has been raised by our friends, that we farmers are satisfied that there is an interest in it which concerns us all, whether we live on this or the other side of the Alleghenies. It is a question that concerns us all, and so closely interwoven as to be almost paramount to all other interests. It is an interest that we should agree to try to bring about such a solution of it as shall be to our advantage.

Now the greatest crank or fanatic would not urge that the whole institute should be devoted to that; but it seems to me among institute workers there should be an intelligent co-operation, all tending towards this one purpose, a proper and correct and just solution of the question. If that can be brought about, or if that, in being brought about, can be assisted by the farmers' institutes of Pennsylvania—if that question or that problem can be righteously solved, it will be of sufficient value to compensate for all the farmers institutes that can be organized to-day. I say it is a proper question for our consideration, so that we can, at the proper time, have a solution of it.

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## MUSIC AT INSTITUTES.

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Chairman Hiester. "Should Music Be Provided for the Several Sessions; and if so, What Is the Best Method of Securing It?" Mr. A. J. Smith.

Mr. Smith (of Clearfield). Most assuredly it should. I believe when we get to heaven, if we are so fortunate as to reach that place, we will find more farmers there than of any other calling in this life. I believe that they want to support a good thing. I was at a convention, probably a year ago, where a lot of directors sat down on music in the common schools, because they had too many branches already.

That was a poor excuse to have the children of the State denied the privilege of being taught music, because there were too many branches now being taught. I do not know whether we will plow when we get to heaven, but we will surely sing, if we believe what we have read about it.

I believe it should be provided, not only because music is a good thing, but it is an entertaining thing, and enlivens every meeting. Not only that, but because we know that the people are attracted by music. We have been talking about advertising; but there is nothing in our section that will bring out the people better than good music. I do not say that we should have a concert. The way to get it is to look for it, just as we do the other features. I believe there are a few people in every community who can sing something. If we are not for music, we are wonderfully lacking in that particular.

The Secretary called my attention to a letter that I wrote to him, whether the people could have any music. He said some could whistle, and some could sing, and some could whine. (Laughter.) And some people do not care to sing. We can hardly raise a song in some places. Let us teach the young people that we are in favor of music. I prefer singing to instrumental music. I think that a good song that everybody can understand, and well delivered, suits an average country audience better than instrumental music; while instrumental music is better than no music at all.

Chairman Hiester. The Secretary suggests that you give us an illustration.

Mr. Critchfield. Of course he is a singer, and should illustrate on this occasion.

Mr. Northup. Mr. Chairman: I want to say just a few words about music. I represent the county where that great singer came from, Mr. A. C. Sisson. There never was a man who attended the farmers' institutes who was more missed than he; and if there was any one thing that I appreciated when I went into an institute, it was that I had my farmer friend with me. An institute without music is about as badly off as can be. Last year I actually secured a number of farmers' children to help in the music. I found that one of these children, a boy, only ten or twelve years old, could play a banjo well; and that a girl could play a piano or organ; and I said, "Would you like to have these children go out to the institutes?" The mother said, "I will let them go, if you will be responsible for them." I never had more responsibility. I don't believe there was one thing that had greater success last year than those little jubilee singers. The people all around the country were anxious to go and hear them, both black and white. Now, music must enter into the programme. We must have it.



Mr. McGowan. My honorable predecessor, Mr. G. D. Stitzel, three or four years ago sent for me to take charge of the music during one of his sessions. I took charge of it; but I told him it would cost a little money. I believe if you cannot get it voluntarily, you can by paying for it. I think you should have instrumental music, if not vocal. Generally all it will cost will be the dinners, with the exception of one man, a cornetist of ability to lead. I furnished a quartette, and he held one of the most successful institutes in Berks county. I think it is absolutely necessary to intersperse the proceedings of every institute with vocal and instrumental music.

Mr. Critchfield. I do not think there is anything that adds more to the life of an institute than music. There are some localities where we cannot get it without paying for it; and in numerous other places we can. Away out in the rural districts, in some places we cannot get very much music, excepting the church music; music that is ordinarily sung in the churches. My plan has been to have a committee on music appointed, and I instruct them or charge them to get the best singers of the churches, and also to get the best singers in the community, together; and we pay the expense of heating the house, or the hall where the institute is to be held; and so they meet to practice; and they sing sacred music, because that is the only kind they are accustomed to sing. When we cannot have all kinds, we have that kind.

Mr. Weld. Our plan is to have music. We secure a man to select the music, and select his helpers. If it is not voluntary, it is paid for.

Mr. McWilliams. It is pretty generally conceded that we should have music. Our institutes are usually held in the churches. I find it a good plan to see that the church choirs in the community are invited, and to appoint some of them a committee on music. I find it a good practice to have them meet for rehearsal. Then when the time comes, we have music.

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## NUMBER OF DAILY SESSIONS.

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Chairman Hiester. "How Many Sessions Shall There Be Held Each Day?" Mr. D. E. Notestine.

Mr. Notestine. Mr. Chairman, Ladies and Gentlemen: How many sessions shall there be held each day, during the time of the holding

of the institute? That is a subject which I think we all have to consider for ourselves as local managers. We have first to be governed, partly, by the number of days for an institute at each place. Secondly, we have to be governed by the location for the institute, whether we are closely surrounded by farmers, and whether it is easy of access. Thirdly, we have to be governed, to some extent, by the kind of agriculture in which our farmers are engaged—whether they are engaged in general agriculture, or making in that community a specialty of any occupation, such as dairying, trucking, etc. Fourthly, we have to be governed by the class of people who live in the community, whether we can have a successful institute, or have a morning session. There is no trouble, as a general thing, where we have successful institutes at all, to get the people out to the afternoon and evening sessions. The trouble is, where we have one day institutes, to get the people out to the morning session. Now, when we go to hold an institute in a community where we have a class of people who depend on cow's ears for hollow horn, or where they drop a red hot horse shoe in the churn to drive the devil out of the butter (and by the way, there is none of that class in Mifflin county, I think; but some of our citizens cannot tell whether they live in Huntingdon or Mifflin county), (laughter); these are all to be taken into consideration; but I think that where we know we have live institute workers, and have men who are progressive farmers, where we hold a one day institute at a place, we know that we can hold three sessions, one in the morning, one in the afternoon, and one in the evening.

Mr. Stephens. In our county it has been the practice to have two day's institutes, and five sessions; to commence at one o'clock the first day, and hold a session in the evening, and three sessions the next day. We have dispensed with the practice of welcoming to the institutes, and we go right to work. We are more successful that way.

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### PREPARING A PROGRAMME.

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Chairman Hiester. "What Is the Best Method for Preparing a Programme, and what Should It Embrace?" Mr. M. W. Oliver.

Mr. Oliver. Mr. Chairman: It is a saying, but full of truth, that "goods well bought are half sold." And so I believe in the preparation of a programme for any meeting. If that programme has been well prepared, the success of the meeting is half assured.

Now, how would I prepare a programme? If we have two or three members on our local committee, I would meet with them at some place, and I would have their wives meet with us also. I would ascertain, as far as possible, what subjects would interest the people most in the vicinity where the institute is to be held, and those topics would have a place on the programme. By whom would I have these topics discussed? I would have persons in the community, as well as those from a distance, to discuss them. I would have young men and young women, who had much experience, assigned to separate topics for one-half the programme, and the remainder assigned to foreign speakers. I remember a remark which our friend Jeremiah Black once made: "All great men grow smaller the nearer you approach them." I am not one of those who believe that we have a great many in Pennsylvania, or any other State, who can interest those who attend our institutes during three or four sessions. I believe that the State speakers do more good by not leading off; but by holding themselves in readiness to answer any questions that may be put to them by those in attendance. I would have rehearsals by young ladies and young men who have influence in the community, and who will take part in the institute work. For the first topic, I would have a very good one, so as to have some of the best wine at the beginning of the feast. Then I would have some of the best wine at the last. In fact, I would try to have good wine all the time. (Applause.)

Mr. Philips. I agree wholly with all that the gentleman has said. It has been my pleasure, as well as duty, to conduct some local institutes in our county. And while they are usually very successful there, and while our programmes are usually too full, yet it sometimes occurs (and I think this will be the experience of more institute managers), that the committee will select unfortunate subjects for that particular time; subjects in which the audience do not seem to be interested; and after you have gone through the ordinary topics on the programme, you find that you are at a loss, and the institute manager becomes embarrassed. He feels that the thing is going to fail. To obviate that, it has been my practice among the committee who are actively interested, and whom we consider equal to ourselves, to take upon themselves to fill in any lapses that may occur, and yet to not feel slighted if they do not have an opportunity. Their names are not upon the programme, and yet they have taken up a topic in which they are interested. John Smith would be asked upon what topic he would be interested; and so would others of the committee; and in that way we have some reserve force. I simply wish to say, that we have found this plan to work admirable, and it avoids these unpleasant breaks that nearly always occur somewhere in a county institute.

Mr. Hoover. I desire to say something on this subject. In the portion of Lancaster county that has been assigned to me, I find that a programme has accomplished the most, prepared somewhat in this way. I make out one to include our home talent, and select such speakers as are known generally by the public to be eminently successful in some particular branch. For instance, a great cattle feeder, or a great corn grower, or a very successful wheat grower. Whatever may be his special line, I want that man on the programme, because I can get a number of persons to come to that institute and learn from him; whereas, probably, they would not come but for that one particular person. Knowing the fact that he is a very successful cattle feeder, and not knowing exactly how he acquired success in that line, they go to get the secret that otherwise they could not possess. So, we find that it is best to have local talent, as well as foreign.

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#### LECTURES FOR ENTERTAINMENT.

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Chairman Hiester. "Should There Be a Lecture for Mere Entertainment?" Mr. M. N. Clark.

Mr. Clark. Mr. Chairman, Ladies and Gentlemen of the Institute: It seems to me that topics 9, 11 and 12 should be embraced in the topic, "What is the best method for preparing a programme. and what should it embrace?" and that the topic, No. 11, covers it all; or in fact, does cover the three topics as bearing upon a successful institute; and that, of course, includes No. 12, "Should there be a lecture for mere entertainment?" In this connection I would say, individually, where we have a well organized community, and but a short time to devote to institute work, most assuredly, I would dispense with the lecture for mere entertainment. On the other hand, a good, well prepared talk is entertaining in itself. A good discussion is entertaining, and is all right; and information well told during a talk, is all right. I do not object to that, though it is entertaining. But for us to set apart a special lecture for the purpose of entertaining, it seems to me has grave results. For a lecture for mere entertainment, we would have to select some special person, who is known as an entertainer. The result would be that we would have a great many people attending our meetings who would not be interested at all, because not in the line of interests pertaining to a farmers' institute. I believe if we have a half dozen people coming in there and interested in what is going on, it is, nevertheless, a great disappointment for the



rest, if they fail to be interested in the speaker's talk. It seems to me that we have passed out of the early stages of institute work in Pennsylvania. I remember the first institute we had in our section a great many years ago. We had a brass band, and a lecturer with it, whose duty it was, especially, to bring the people out and entertain them. It was all very well then; but that day has gone by. Institute work has gone to almost all parts of the State; and unless we get into some district where they are indolent, and don't care about it, the improved methods should prevail. But in the last mentioned district, perhaps it would not be out of place to have a lecture or something of that kind to bring the people out and entertain them, something like advertising to bring them in. But generally, I think, I will be safe in saying, that in the preparation of our programmes I would not give place to a lecture for mere entertainment; that it is not consistent with the institute work in Pennsylvania to-day.

Mr. Riddle. I do not agree with the gentleman that the time is past that the people do not want to be entertained, and entertained for the sake of the entertainment alone. I do not believe there is a meeting of any character in which it is not necessary to have entertainment of some kind. Besides, there is to-day no more profitable method of instruction than a good, entertaining lecture. As an inducement, when we go to our churches on Sabbath morning, after the devotional exercises have commenced, or after the sermon is preached, what usually takes place? An entertainment in the way of music, for no other purpose than entertainment; and it is right. We should always be ready to have some entertainment; and I believe in a lecture solely for that purpose.

Mr. McClure. I believe in treating this subject just like every other subject that we have had this afternoon. There are exceptional cases. In our county our institutes are well attended. In one locality, especially, we were not able to get a hall sufficiently large to accommodate the people without paying for it; and the cost of the hall, a very fine one, was \$25 for the two sessions. The agricultural society which meets there has been generous enough to donate the price of that rent every year. In consideration of that, the managers of the institute have deemed it to be their duty to provide some entertainment as a reward for the good feeling of the people of that locality towards the institute; and I think it is a good plan. For four years they have paid \$25 a year for the entertainment.

## EFFICIENT PRESIDING OFFICERS.

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Chairman Hiester. "How Shall We Make Sure that an Efficient Presiding Officer is Secured?" Mr. Joel A. Herr.

Mr. Herr. Mr. Chairman: In order to decide how to make sure that an efficient officer is secured to preside at our meetings, it will be necessary, perhaps, to look at the duties of a presiding officer, and what constitutes an efficient chairman. In the first place, the chairman of an institute must be a reputable person; and, if possible, distinguished in his own neighborhood. He should have a good, strong voice, capable of being heard in all parts of the room; and then he should have as much enthusiasm as our friend Northup, of Lackawanna, to make a good chairman. He should be able to properly introduce the speakers; he should have some knowledge of their ability, and of the line of their work; and be able to tell the audience whether they are practical in their work, or rather, to give some idea of the ability and of the importance or character of the speaker—not that he should go into an eulogy of his work, and embarrass him; but he ought to have an intelligent knowledge of who he is, and where he is from. It is the duty of the chairman, occasionally, to introduce discussion. More than once I have found it necessary to state that so and so will instruct us for twenty minutes; and so and so to take up the twenty minutes, and continue on as though he were going to speak for an hour and a half. An efficient presiding officer should know when the time expires, and stop the speaker in a proper manner. Then the chairman should prevent wrong impressions going out from the institute. More than once I have heard extravagant expressions. We do not want them to go out to the injury of our institutes.

The Chairman. That is not the subject.

Mr. Herr. I will stop right there. The question is whether everybody is comfortable; and of course if they are comfortable, they will be more likely to be orderly. The main question is to be able to throw in a word in which each individual excels, to make the subject interesting. All these are necessary to constitute an efficient chairman. He ought to be a member of the Board, and the chairman of the committee who has this work in charge, if possible, provided he has these qualifications. But I believe one-half of the managers of institutes in the State are not properly qualified to be presiding officers. They may be intelligent men, and men who may arrange a great pro-

gramme; but some people have no magnetism and no enthusiasm, and they cannot keep an audience lively. The sooner the chairman finds out that he is not in his element, in that position, the better it will be for him to call some one else who will do better. I have been in neighborhoods where prominent men were qualified to preside; and I think it is always best to have such. This matter ought to be arranged and talked over by the institute committee before the institutes are held; and the chairman ought to be appointed, if possible, before that time. He is the presiding officer, and if he does not know how, or is not in a position to preside, he should withdraw and allow the committee, or the manager, to appoint some one in his place. I have attended institutes that I thought were perfect failures, because of the inefficiency of the presiding officer. Perhaps he was a reputable man and wanted to preside properly; but he could not be heard in the rear of the room. I find that even on this Board some persons cannot be heard all over the room. A chairman sometimes cannot be heard. When you have a chairman of that kind, he will hurt the interest every time. Whereas, if you have one who can be heard everywhere in the room, and gives life and interest to the institute, he makes the meeting pleasant and cheerful.

Mr. Critchfield. How do you get him?

Mr. Herr. I told you that he should be selected by the committee of arrangements. But they cannot educate a person up to that point in a few days. If they cannot find such a person, the next best plan is to secure the next in ability, give him some instruction, if possible, and encourage him to do the best he can. If no one can be found who is qualified to preside, I believe it is the duty of the Department to designate some one as chairman.

Chairman Hiester. Now, you are on another question.

Mr. Herr. I am answering a question that was asked me, how the man could be secured. (Laughter and applause.) And I say the institute manager, or a committee under him, should secure him. I have simply answered the question, What shall be required of the man, and how he shall be chosen.

Mr. Brosius. Suppose we try Colonel Woodward on that?

Mr. Smith (of Clearfield). Mr. Chairman: In a great majority of cases the success of an institute depends upon the presiding officer. Now, the question is, how shall we make sure that an efficient presiding officer is secured? I will say this, gentlemen, that if you have a good "boss" in your community, select him as the presiding officer.

STATE SPEAKERS.

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Chairman Hiester. "What Attention Should the Local Manager Give to the State Speakers?" Mr. H. V. White.

Mr. White. Mr. Chairman, Ladies and Gentlemen: It seems to me that as soon as we get an advance bulletin giving the dates and places of our institutes, that we should make it our business to study the character of these men, and to know each one of these speakers; to learn what he is, who he is, and to learn all that you can about him, so that you can become thoroughly acquainted with him, although you have never seen him. Then begin at once with your committee. I take it for granted that the manager has a committee at the place where he is going to hold the institute. Call their attention to the biographical sketch of the man who is to be one of the speakers, and have them become acquainted with him. If you will do this, you will have, at least, twenty-five men in your county pretty thoroughly acquainted with the man the State is going to furnish, and they will be talking about the qualifications of this man to their neighbors, in the stores, at the churches, and everywhere else; and in the six weeks that you have before the institute convenes every one in that community will know more or less about the speaker.

When the speakers reach the station, meet them with a comfortable conveyance. See that they get good accommodations. Give the landlord a tip at the start, that they are State speakers, and pretty large men. It will not cost you anything as managers; the State pays the bill. Then, take in your most influential men and women in that locality, and introduce them to these speakers. Make everybody feel comfortable and jolly. Then place in the hands of your speakers the programmes of the several sessions; and then say, "Gentlemen, all these people in this community have been inquiring about the speakers, and these topics, and they have studied up the bulletins; and we now leave it entirely in your hands to make a success or disappointment." And I venture that every one of those speakers will go to work, and employ the time while he is with you.

But do not stop there. Keep right with your speakers every day; and ask them for suggestions as you go along; and they in turn will ask you for points, that you ought to gather for them. You know, after you close the last session, no matter how tired, some who have attended the institute like to have a little conference with the speakers. See that the speakers get the credit that is due them. When they are ready to leave, if they have been a success with you, and if



they are the kind of men that you appreciate, and are doing good in the cause, tell them so, and that you want them to help the managers in the other counties. Give them to understand that they are men doing good work. If they have not been a success, let them go, treating them kindly, and it will be all right.

Prof. Heiges. Where an institute is held in some little village, I would suggest that the nearest postoffice to the place of meeting be placed in the bulletin in parenthesis. It was our experience last winter that sometimes we could not get our mail; and a portion would not be received until after the institute. The Bulletin sent out, states that it is the duty of the local committee to furnish a vehicle. It is not very pleasant, after speaking, or after being in a crowded room, to have to hunt for that which we know nothing about. It is not very pleasant, either, to hunt for a conveyance to convey one to the nearest railroad station. This has occurred. We were entire strangers in the town, and did not know how to obtain a conveyance by which to reach the railroad station. But perhaps the most important of the two suggestions is, that the nearest postoffice should be placed in parenthesis, if there is no postoffice at the place fixed for the holding of the institute.

Mr. Critchfield. In regard to the programme, I believe the local manager, or some of his committee, should have copies of the programme ready to be put into the hands of the State speakers as soon as they arrive. Rather, I think the manager ought to be able to get his programme out, at least, two weeks before the meeting. I do not know but that it would be better to have it earlier. Then I believe that the local manager should turn to the Bulletin to see where the State speakers are at that time and send them programmes in advance, so that they will know what will be expected of them when they get to that particular place.

Then in regard to the hotels, as has been suggested by the first speaker, take them to the best hotel. Suppose your institute is held in some small village, in a rural district, where there is not a very good hotel, or a hotel where it is likely that the speakers will be made comfortable; I think it would be a good plan for the manager, or his committee, to make some arrangement to have them entertained in their homes. I know it takes a great deal of nerve to do this over the proprietor of a little hotel; but I know some speakers have had experiences where they would have appreciated very much something of this kind.

In regard to the hotel keeper, and the tip that should be given him, it would not be out of place for those having the institute in charge, to say to the hotel keeper that these men, generally, are somewhat advanced in life, and men of pretty large weight, and that they are likely to snore, and they would like to have a room apiece; so that

they may not be obliged to say to the hotel keeper, "No; we prefer not to sleep two in the same bed; though we do not object to two or three beds in the same room." I think this can be looked after, and it will do a great deal in making the labors of the State speakers more pleasant and agreeable.

Secretary Hamilton. I can speak on this subject from a disinterested point of view and from personal knowledge, because I have been all over the State, and know what the speakers have to endure. It is well for a man to have gone through these experiences, for he can then sympathize with the workers. The man who oversees work, ought himself to have been in it. And so the man who has to look after the speakers ought himself to have suffered some of the inconveniences that are inseparable from their work. My instructions to the speakers are: "Go to the best hotel in the town, and have the best that is going; I want you, also, when you have to drive, to have comfortable conveyances, good horses, good carriages, and plenty of wraps." And if any man in this house will journey along with these State speakers in midwinter, he will say that this advice is right. Therefore, I want to say to all the managers here, supply these men with a warm room every night. Do not put any of them in a cold room. This is very important. Health depends upon having these comforts, and a man now must have them in order to do his work, if he has to change from place to place day by day and constantly use his voice.

These men have a hard life, and I have got a warm heart for them. You cannot drive them 25 miles and put them to work, and then drive them back again in extreme weather, without great wear and strain. They need the best you can give them, for if they break down, the whole machine is down and the subsequent institute must be injured. We can get a lesson from the horse jockey. What do they do with the race horse? When he goes around the track two or three times in a close heat, when they stop you see the jockeys there with blankets and sponges, and all that sort of thing, to prevent him from taking cold? (Laughter and applause.) These men are on an equal strain and need equal attention if they are to be ready for the next heat. I have known an institute manager at dinner time to say to a lecturer: "Have you any place to go to dinner?" and then walk off, having made no provision for him. Now, there is, I am glad to say, not much of this; but it happens sometimes. We get new managers sometimes, and they do not understand the necessity of carefully providing a comfortable place to stop. I have walked a mile after 11 o'clock at night across fields and through snow, my clothing saturated with perspiration.

Mr. Critchfield. To have a cold room in the coldest part of the house.

Secretary Hamilton. Exactly so, and then retire in a cold room. I have slept in a cold room with my coat on. I did not have my boots on, though I ought to have had. (Laughter and applause.) That thing ought not to be possible in Pennsylvania. Let me say, in conclusion, that this matter of taking care of the State speakers should not be overlooked. It is of the first importance, that they shall have every attention that men can have who are in their position, and who are exposed as they are, and upon whom so much depends. Take last winter; and you know the temperature at which they traveled day and night, the thermometer 15 to 20 degrees below zero at times, and required to keep in condition to speak every day. Their comfort is, therefore, of the first importance, in order that they may be well preserved, and able to do good and satisfactory service. (Applause.)

Colonel Woodward. No one who has not undertaken this sort of work can appreciate the wear and tear it is upon the man. If you will take the record of the Secretary's office—that of the Director of Institutes—the last three or four years, you will find that of the large number of people, more than half have broken down and gone home sick. There is no harder experience. Preachers are always talking of the difficulty of speaking three times on Sunday; but our people make fifteen speeches a week, and they are going from place to place, and changing beds every night. They do it after being the whole evening at a meeting, and after having remained in an over-heated audience room all day; and it virtually means death to some people. They do it after having talked from three to five hours, and are then driven for miles on an intensely cold night in order to meet next day's engagement.

Prof. Heiges. I am glad that the Secretary of the Department of Agriculture has suggested to the local managers that where there is no suitable hotel, that some good private family be engaged to entertain the speakers.

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## INSTITUTE WORK FOR 1900.

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Deputy Secretary of Agriculture Martin. I have listened with attention and great interest to the recitals of difficulties through which the State speakers have labored during the past few years. I want to say a word or two to the boards of local institute managers on a little different line. I have, during the sessions of this institute, formed some very pleasant acquaintances with you. My estimate of your ability, and your conception of the great work that is before you in this State, is such that I think no words of mine are



needed upon this occasion to stimulate you to greater effort, or more thorough preparation for this great work. I am under the full belief that you will, during the institute season of 1900, take charge of this work, and co-operate therein in such a manner that we will go hand in hand, and that the institutes will maintain the high reputation they have secured and the Department such a reputation as will be in keeping with the highest welfare of the great Commonwealth of Pennsylvania. (Applause.)

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### HOW MANY TOPICS.

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Chairman Hiester. The next topic is very closely related to topic No. 23. We will combine both these topics, and discuss them together. First, "How Many Topics Should Be Arranged for Each Session?" The gentleman assigned to answer the first is, Mr. D. B. Bates.

Mr. Bates. Mr. Chairman: The subject, "How Many Topics Should Be Arranged for each Session?" is so indefinite that we can talk about it, and yet, perhaps, not come to any very satisfactory conclusion, for the reason that there are many conditions that surround the different sessions in different places, that it is somewhat difficult to arrange to answer the topics, and especially in the time given. After we have selected the topics that we think are best suited for the community, and decide upon whom we may possibly get to discuss them, then we determine how long it will require to present the papers. It is very difficult for a manager under all circumstances to arrange a set of topics, and put them into the time necessary for an institute. Now, if we had such gentlemen as our worthy speakers here, and if they would get out into the country and fire into the old time supervisors upon the road question, and we would put any of them down for ten minutes, they would get furious.

Now, when a subject of vital importance to the whole State is brought up for discussion, it is important that we give them liberty, for we do not undertake to curtail them in their talk; because the community and everybody is interested in the subject, and they want the fullest development that is possible to be had. And for that reason, you see at once, we drift into difficulty. Suppose we arrange for a certain lot of topics for a session, and by overlapping the time we would perhaps drive out two or three speakers, who may have



come a distance and have subjects they want discussed. Most likely they would be local speakers who are hard to turn down. These gentlemen who are traveling through the State, and are representatives of the State, say "I can get that much more rest;" but the farmer who comes wants to be heard; but you have to cut him down. The result is, you need not ask him next time. So there are local difficulties that the local managers have to contend with that are not always pleasant. It is not always well to say to State speakers, when they go to address a local institute, "How much time do you want?" They come to the conclusion that we are reflecting upon them. And yet how are we going to arrange our programme, unless we know how much time they are going to consume? Now, these men who came to speak, in the county, sometimes you can cut them off a little, if they are not political friends, or something of that kind. But in the end they will get away with the whole institute; and you find that there are a lot of men that you cannot possibly take up their topics.

For instance, almost every manager has his committees. These committees are expressly appointed for certain duties. Unfortunately for myself, I am a member of the committee, and I am the manager and I am hostler. At the close of the first institute, I asked the gentlemen to go aside and form an organization, which they did. I thought it evidence of a purpose that they would take up the work, and elect their own president, all of which they did. But that was the last of it. The next year I had to start where I did the first year; and so from year to year. If they are organized there, they do not continue as an organization. If there are any regular organizations there, I do not know them as such. We appeal to every organization that we know of there, and I ask everybody to take part in this; but men are very easily turned down, and refuse to do anything more. So that in preparing topics we have got to be governed, first, by what will, perhaps, best suit our community—what our farmers most want, and then we have got to get speakers, and we are taking chances all the time.

Mr. Clark. It is now five o'clock, and we have but an hour before supper time. I move that all be heard who have been appointed to answer the questions as yet unanswered, and that they be heard without further discussion.

The motion was duly seconded and agreed to.

## THE QUESTION BOX.

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Chairman Hiester. "Should There Be a Question Box; and, if so, How Ought It to Be Conducted?" Mr. B. B. McClure.

Mr. McClure. If I were to answer in a single word, I would say, yes. The Department of Agriculture furnishes each district with three lecturers, who are well qualified, theoretically, scientifically and practically to entertain and instruct our farmers. It is seldom that a foreign lecturer will talk of methods and practices of everyday life on the farm; but he enters into a new field of thought, and brings out such facts as are calculated to cause those who are listening, to think and study over, in connection with their experience. It is just at this point that the listener asks for light, and he puts a question, wanting to know if those things are true. If the speaker is alive to it, he will stand by his system.

The same is true of local talent. Some time should be given to ask speakers to throw more light on the subject, and sometimes there is much additional information brought out by these questions put by the audience to speakers. That is one difficulty we have in our institutes, to draw out the audience to ask questions, and take thereby a more lively interest in the proceedings. One of the best methods is to interrogate speakers through written questions; and the proper time for these questions is at the close of a lecture; then there can be discussion on them. Have the question box provided, and let it be under the supervision of the local manager; or there could be some one appointed best qualified for that duty. I would say, that there ought, by all means, to be a question box, and let the one in charge of it have questions answered which are considered proper to go before the institute. Any questions that will arouse unnecessary feeling, or on political or other similar subjects, should never be admitted for discussion before the meeting.

A Member. Who should conduct that question box?

Mr. McClure. I would say a committee of three.

A Member. Would you let that committee select the subjects?

Mr. McClure. Not always. There are questions prepared by the committee, if necessary, and submitted for answer.

## ORAL AND WRITTEN ADDRESSES.

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Chairman Hiester. "Should an Address Be Written or Oral?" To be answered by Hon. Louis Piollet.

Mr. Piollet. Mr. Chairman: It depends very much upon the man who is going to make it. I believe that a man who is accustomed to speaking; or who makes it a business to lecture, by going over our State, as some of our Speakers, that they should be prepared to make their addresses orally; they should not be required to depend upon manuscript. I believe an address thus delivered has more force. I believe a man can get up and impress an audience with the facts he has to present, much better by an oral delivery. As a rule, I believe, he will do better without any manuscript before him.

On the other hand, where we are to consider an important subject in our farmers' institutes, I think it is better for the parties who are going to take part, as the local help, to write out what they have to say, and read it. Use manuscript, if you are not accustomed to public speaking. Those who are not able to think upon their feet, when they get before an audience and undertake to talk upon a question, become embarrassed, and lose the ideas that they want to lay before their hearers. In that case they do much better with manuscript. But no man succeeds as an orator who has to depend upon manuscript. I think the young farmers, especially, should learn to say what they want to say while they are on their feet, and without referring to manuscript.

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## SET SPEECHES AT INSTITUTES.

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Chairman Hiester. "Should a State Speaker Make More than One Set Speech in a Day?" To be answered by Mr. J. J. Thomas.

Mr. Thomas. Mr. Chairman: I do not like those words "State speaker" in an institute. I think a farmers' institute should be for farmers only, and I think the State speakers should be appointed from them. If we do not have them in the institutes, I do not think they will amount to much with the hearers; nor if the speakers are

confined to the talks on the list of topics furnished by the Department of Agriculture. All the topics should be interesting to farmers.

To give you an idea, I will give you an illustration of the way we did at an institute. We went around to get a number of men and women to prepare papers. I had an advisory committee, confined to 20 or 30, and I submitted this list, or this programme. One said, "Mr. Thomas, I don't think it is necessary to have that man. Why, that man doesn't know anything about raising potatoes. Here is another man upon horse raising. That man never owned a horse. He has his father's horse; and he takes care of that." So they went on until they had eliminated from the list nearly all the subjects that we had upon it. We ought to have some practical men. I said "Are there not some who have a knowledge on the various subjects?" Then a man who knew every one in the community mentioned a number who were very good in their specialty; and I was compelled to take their advice; and we had to throw out nearly the whole list. We did take about three or four. We had an excellent institute.

There was another meeting held after that institute was over, and they said to me, "Couldn't we arrange to get one of those speakers to come here for two weeks who are sent by the Department of Agriculture?" One said (I think he was chairman of the committee), "I believe we could raise the money to have the speakers come here and hold a one week's institute." They wanted Mr. Heiges, Colonel Woodward, Prof. Frear and Mr. Hiester, and others. They hesitated about allowing me to take up the time of that institute with local essays. Now, I am not opposed to local essays. I believe where you can find a person who is qualified, it would be a benefit to his fellow farmers. There is this one thing I would advise, and that is the procuring of essays from ladies. Nothing so much contributes to the farmer's happiness as the farmer's wife.

The Chairman. You are off the subject.

Mr. Thomas. I never saw a young lady read an essay, or speak at an institute, that was not listened to with interest; but every one here has heard many men in these local institutes drive the farmers out of the house. With this I will leave the question, as it is getting late.

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## PARTISAN POLITICS.

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Chairman Hiester. "Should Partisan Topics Be Permitted?" To be answered by Ex-Senator Critchfield.

Mr. Critchfield. Mr. Chairman: I would answer that question by an emphatic, no. I cannot conceive of partisanship



coming into any institute, unless it would be a partisanship of a political character. Of course, there are religious partisans; but we are not likely to have anything said along that line, or that would induce religious partisanship. But we do know that there are political manipulators who want to get in their work at farmers' institutes. I do not know but it is the right thing to be a partisan; politically; but whether the right thing or not, we know there is nothing that a man wants to advocate more than his politics; and we know that there is nothing we cling to with so much tenacity as religion and partisan politics. But when you introduce partisan politics in an institute, you are likely to stir up a muss, and get into trouble. Now, we want to be together in unity as far as possible in every neighborhood. Therefore, I would say, never let partisan questions be discussed at a farmers' institute.

One of the first institutes I attended—and Colonel Woodward was there also—two or three politicians came from the county seat, a distance of, probably, 14 or 15 miles, in order to turn it into a political convention, and we had a hard time preventing it. If there had been one, it is most likely it would have broken up the institute.

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### CHAIRMEN OF INSTITUTES.

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Chairman Hiester. "What Is the Remedy for a Chairman who Is Inefficient, and How Shall the Remedy Be Applied?" To be answered by Colonel John A. Woodward.

Colonel Woodward. Mr. Chairman: A very wise man once said—I do not know but what it was Oliver Wendell Holmes—that the education of a child should begin a hundred years before the child is born. I do not know that I would be justified in saying, that the remedy for an inefficient chairman should begin a hundred years before he was born; but after an inefficient chairman is in place, there is no remedy. For you cannot help hurting somebody, or have somebody's feelings injured, if you displace him on the spot. He is a fixture for the time being. You cannot ask him to step down and out, and give way to a more efficient person. You might give him some medicine so that he would have to go home (laughter); but it would not do to turn him out, and place in his stead an efficient chairman. The remedy must be provided for by the local committee before the next institute is held. Your chairman must be found before the institute meets. The fact that he is the local

manager of the county, is not evidence of the fact that he should be chairman. A man may be an excellent manager, and yet not fit for chairman. A chairman must have the courage of his convictions, and a knowledge of the value of time. He knows how to go ahead, and how to deal with the local people. You want a man who possesses the best qualities for these purposes. You want a man kind-hearted and generous, yet firm. Let your committee get to work and look over the whole field. If they cannot, let your local manager hunt out the most efficient chairman. But the best plan would be to meet your local committee, and go over the list of available men, and select him.

One should be selected who feels that it is an honor to preside over the institute, and he should be provided from among your own people. It is not a good plan to go outside. Now, it is an honor, because it requires an efficient and capable man. It is the man who honors the position, and not the position that honors the man.

A man ought not to be selected to preside for political or social reasons, but because he is capable of conducting the business of that institute properly. The only remedy I can suggest, where there is danger of having an inefficient chairman, is to select a man who is known to be competent to lead, and to conduct business in a proper way; for many times there is some difficult duty to discharge; not because he has a good farm, or even if he be a lawyer; but because he is a man who can conduct an institute properly; a man whom the people will respect, and who can preside cheerfully, yet with dignity. A boy asked his father, "Why is that man called the speaker?" The answer was, "Because he is not expected to speak at all." (Laughter.) Whatever his calling or occupation, a competent man should be selected. I do not say that he must be a farmer. It is just as important to have a competent chairman, and even more so, as a first class programme; for he can make that meeting a success, or a failure. A man who is a failure himself, is almost sure to make a meeting a failure.

I might repeat, and with a great deal of feeling and kindness, that there are a great many most excellent managers who are not qualified to be chairmen of these meetings; but there is often a disposition to select them. The chairman should not be selected, if he is not the best man for the chairmanship of the meeting. There are men who are not able to talk very well at length, but yet they are able to conduct an institute in the right way. It is not a question of supporting the local manager, or a question of the honor of presiding; but a question of the life and success of the institute itself; and many other interests should be subordinate to the proper selection of the man who is competent, whether he be of the organization or not. I

think it would be a credit to an institute to have for a chairman a minister or a physician, not because of his eloquence, but ability to conduct a meeting. Though they may not be farmers, generally, they are heartily and sincerely in sympathy with the farmer. There are no men more in sympathy. Very often there are men in other callings competent to be chairmen.

But the remedy must be applied in advance, not after the disease has been fastened upon the institute. I know there is a provision in the Institute Bulletin, sent out by the Director of Institutes, to the directors or managers in the various sections, where they happen to be placed in these positions; and one of the reasons given is, that there may be protection against an inefficient chairman; and it is suggested that where there is an inefficient chairman, that the manager should assume the chairmanship. I want to say that that is a delicate thing to do. I have found it impossible to do it. I would suggest, just let the meeting drag, and finally go to pieces. Otherwise you will have to set the presiding officer aside, and put some one else in his place. You can do it, if it must be, provided it is for the local manager's own defense; and the county manager is the man who must take that in charge, or take up the subject with the committee, assuming charge of the institute meanwhile, and secure the most efficient man as the chairman.

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### INEFFICIENT LOCAL MANAGERS.

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Chairman Hiester. "What Is to Be Done with a Local Manager Who Is Inefficient, and Does Not Work up His Institutes?" To be answered by Mr. W. H. H. Riddle, of Butler.

Mr. Riddle. I think it would be about as difficult a question to answer as the one that Colonel Woodward has just replied to. I do not know any other remedy better than to depose the man, because he has failed when called upon to act. If he is not the proper man, remove him. But it is a question whether we should apply so drastic a remedy—whether it would be politic to do so in all cases. I feel if such a rule were laid down in all the lines of work, that in many cases it would be too severe a discipline. I do not know any better way to effect the efficiency of the chairman than just the work that this Board is doing in carrying on the institutes in the different counties, a kind of process of education, because inefficiency doubtless exists in every vocation, or in every calling; in the most menial ser-

vice up to the highest public service; on the bench, with the bar, in the pulpit, and in the forum, all these places have inefficient men. But what are you going to do with them? A process of education is the one remedy. For the last few years, since farmers' institutes have been introduced, it is not so difficult to get competent managers. Men are learning. They are becoming more competent; and it is to the credit of the system that in this State, as well as others, such an improved state of affairs exists. I do not know any other method than that of education.

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### INSTITUTES IN CITIES AND TOWNS.

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Chairman Hiester. The next question to be answered is, "Should an Institute Be Held in Large Towns or Cities?" Mr. John H. Smith, of Greene county, has the floor.

Mr. Smith. Mr. Chairman: As this question was pretty well discussed in the beginning, when these questions were taken up, I do not think it is worth while to say much about it. As I understand the object of these institutes, it is for the benefit of the farmer. That being the case, I would avoid large towns and cities in the holding of institutes. As a rule, Mr. Chairman, I do not think that meetings of this kind, on the whole, should be in towns or cities. In order to reach the farmers, I think we should get out of the large towns, and go into the rural districts, seeking the villages and small towns; and, if need be, the cross road school houses and churches. I think in that way we can reach the farmers better than by holding institutes in towns and cities. With these remarks, gentlemen, I leave the question with you.

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### LOCAL HELP.

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Chairman Hiester. "What Shall Be Done with a Manager Who Furnishes No Local Help?" To be answered by Mr. W. H. Brosius, of Lancaster.

Mr. Brosius. Mr. Chairman: I hardly know how to answer that question, because I cannot conceive the idea of any manager who



would not be willing to furnish local help, if it could be had. But in the event of his not furnishing any, then I would simply turn to the State speakers, and allow them to furnish the material. In some localities they have local help to do a great deal of the talking. But if the manager would not furnish it, or allow it to be used, why, of course, he is unfit to be a manager.

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### IGNORING STATE SPEAKERS.

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Chairman Hiester. "What Shall Be Done with a Manager who Ignores the State Speakers, and Uses Local Help Exclusively?" To be answered by Mr. George A. Woodside, of Warren.

Mr. Woodside. Mr. Chairman, Ladies and Gentlemen: Realizing as I do that I am probably the youngest institute manager here, having served only during the past winter, I feel utterly incapable of giving you any advice in regard to such a manager. I would say that when Prof. Hamilton wrote and asked me to take charge of the institutes last winter, I tried to get all the local help I could, so that the State speakers would not be overworked, and I tried to get all the light I could in regard to the matter of how to conduct the institutes. I gained what information I could from my predecessor, and I tried to follow the instructions as nearly as possible. I should not have accepted, if I had not been able to assist the State speakers with a well prepared local talent. I should expect, if I were going to do the work another year, and use local help exclusively, that the Deputy Secretary of Agriculture would be writing to me that he wanted another manager, and a better man.

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### OVERLOADING PROGRAMMES.

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Chairman Hiester. "What shall we do to our Secretary for overloading this——— (laughter). O! "What Shall Be Done with a Local Manager Who Overloads His Programme?" Mr. T. P. Munnell, of Mercer, has been selected to answer.

Mr. Munnell. Mr. Chairman: This seems to be a question that

I think will be pretty hard to answer. Having been chairman of the institutes held in our county for the past three years, I endeavored at all times to procure enough to help out, and not have much to spare; but still have enough that we would not run out for the lack of something to do. As I think Senator Critchfield and Mr. Hamilton will bear me out in saying, we occasionally would have, where our questions became more numerous than we anticipated, or were likely to—then we would have two subjects—two topics, probably, to talk upon, when we had time for but one. Now, whose fault it was, I do not know; neither can I suggest any remedy. It would not do for us not to prepare enough topics to take up our time. When the question box was opened, which we always tried to have, there were sometimes a good many more questions than we had time to answer; and, possibly, too much time was taken up with that part of the programme. I remember Mr. Critchfield, when we had two topics to discuss, and time for only one, suggested that we put the question to the audience which to use. The topic that had the majority, we discussed, and we let the other go.

Now, what shall be done with the chairman who provided such a programme? That is the question. I have not time to say all I have in my mind on the subject. In preparing a programme (and this should come in on some of the other questions), I appointed committees wherever the institutes were to be held, from the best farmers I could get. To complete this programme we met on a certain day as near as we could get to the place where we expected to hold the local institute. There we finally arranged the programme, as near as we could, by agreeing upon what was best for the locality. Now, under such circumstances, doing the best we could, who was to blame?

Colonel Woodward. Mr. Chairman: Some years ago I read a story of a temperance meeting. The lecturer on temperance had been sent out by the association or society having the matter in charge. The lecturer and a companion arrived in the town in which the meeting was to be held; but during the afternoon one got so drunk that he fell in the gutter. A deacon of the church in which the meeting was to be held, seeing the man in this condition, said: "My brother, how is this? You were sent here to talk to us on temperance. What do you mean?" The drunken man managed to reply: "They sent the other fellow to do the talking, and me for the awful example." (Laughter.)

Mr. Chairman, I believe in teaching by example. I propose at the close of this conference to ask for all the programmes that are left over from this meeting. When I get them, I shall take them home, and properly care for them. Then, next winter, when I come across a local manager, I shall get out one of these, and refer him to the

awful example. (Laughter.) I was not present yesterday; but when I read the programme last evening, I was absolutely dumbfounded. I want to say in the presence of this audience that if there are four men in the State of Pennsylvania who ever talked their audiences to death, they are here in the order in which I shall name them; and I mean the reverse order from that in which they appear upon last evening's programme:—Heiges, Woodward, Ravenel and Rothrock. And all these men to be put upon that programme for one evening. That is another case of "awful example." Then, here are nearly six pages more of topics; and it will be a wonder, when we are through, if we are not all nearly talked to death.

Prof. Heiges. Colonel Woodward was not present during a part of these proceedings, and therefore has not been fatigued like the rest of us. But he seems to be making up for lost time. (Laughter.)

Colonel Woodward. And there is an awful example (pointing toward Prof. Heiges.) (Laughter.)

Secretary Hamilton. There are some things that are done by design; there are other things that are done through ignorance. This was by design. As the members who are here will likely remember, before the programme was prepared, members were notified that it would be very desirable if they would present a paper. It was said in advance that it was not expected that all these papers would be read. But the institute here thinks it is necessary to read them all. If they want to do that, they can take the responsibility. It is not the man who prepared the programme; but the men who carry it out.

Now, the reason why it is so full. It was intended to put everybody on an equality. Inasmuch as the proceedings were to be printed, I wanted to have in them the best that could be had in Pennsylvania; and then to put out the book so that the people of Pennsylvania could read it. If Colonel Woodward desires to keep his paper of last night, or does not want his part of the session of last evening represented, so he can have more ammunition next winter. I think he can have that privilege.

Colonel Woodward. That is right.

Secretary Hamilton. While it was the wish of the one who prepared this programme to have all the papers printed, it was not intended or desired, I think, that these papers should all be presented and read during these sessions.

## THE QUESTION BOX.

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Chairman Hiester. "How Much Time Should Be Given to the Question Box?" Mr. R. L. Beardslee will please answer.

Mr. Beardslee. The answer will be very brief as given by me. In my opinion the question box is one of the best modes known to bring out the most information to those present. But I would not give much time to the answering of questions that a majority of the audience are not interested in. For instance, in a dairying section 75 per cent. may be interested in a single question, and there the answers ought to be full, and more time can safely be given; whereas, if not more than two or three persons are interested, the answer should be very short or brief. If an important question has not been brought out in a paper or speech, or discussion, the question box can be used to advantage, to bring out what was not thought of probably by the leading speakers, and thus additional facts may be laid before the meeting by the best posted persons present. My observation is, that the question box is one of the greatest factors of a successful institute, and can be made a source of information most gratifying to inquirers. Sometimes it is necessary that a person appointed to answer a question should be given as much time as possible, in order that the fullest light may be thrown on the subject, both to the questioner and the whole audience.

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## ADVERTISED AS STATE INSTITUTES.

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Chairman Hiester. "Should an Institute Be Advertised as a State Institute, or Be Named After a Particular Grange, Alliance, or Farm Club, in Whose Vicinity It Is Held?" To be answered by Mr. R. J. Weld, of Warren.

Mr. Weld. In my opinion it ought always to be advertised as a State institute. It is the wisest way, under our official direction, and the best way to reach the largest number of farmers in the community.



## COMMITTEES ON RESOLUTIONS.

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Chairman Hiester. "Should There Be a Committee on Resolutions; and if so, Why; and on what Should They Report?" To be answered by Prof. S. B. Heiges, of York.

Prof. Heiges. In general, perhaps, I would say that resolutions are of no account; but there are certain topics that are of such importance that resolutions may be of value. When churches are given gratuitously, or where citizens in their liberality provide an opera house, or other public building, I think it is wise and just that such liberality should be made known. I think resolutions are of value also when passed on any questions of public interest; such as last winter, recommending the establishment of township high schools, and the resolutions sent to the Department of Public Instruction. But generally, resolutions are of no value.

The programme for the afternoon session having been completed at 5.49 o'clock, P. M., the conference adjourned, to meet in the Normal School auditorium at 7.30 o'clock, P. M.

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## THIRD SESSION.

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Thursday Evening, June 1, 1899.

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The public Conference of Institute Managers reassembled at 7.50 o'clock P. M., in the Normal School auditorium, Gabriel Hiester, Esq., presiding.

Prayer was offered by Rev. Dr. B. C. Conner, of the Methodist Episcopal Church.

A vocal duet followed, by Miss Rivi, soprano, and Miss Bowman, contralto, two of the instructors of the Normal School, Mrs. Sitliff acting as pianist. The excellent rendering of the piece, entitled "O, That I Could Softly Murmur," (Mendelssohn), was heartily applauded.

Chairman Hiester. 'How to Lessen the Labor of Farmers'

Wives," by Calvin Cooper. I want to say that Friend Cooper has been experimenting along this line for a number of years, and what he says will be the result of his own practical experience on this subject.

Mr. Cooper (who was received with loud applause) said:

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## HOW TO LESSEN THE LABOR OF FARMERS' WIVES.

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By CALVIN COOPER, *Bird-in-Hand, Pa.*

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In this age of concentration of capital and organizations to lessen the cost of manufactured goods, the labor of the farmer's wife, as a rule, has not been correspondingly reduced with that of the farmer. Therefore, brother farmers, it becomes our duty as faithful husbands and fathers, to give this seeming neglect such attention as will bring some relief in household duties, correspondingly with those adopted on the farm.

I have seen farmers having sulky plows and riding cultivators, and their wives doing the washing on the old style wash board, and digging garden with a spade. It is not an unusual sight to see a farmer under an umbrella, driving a pair of fine horses attached to a mower, and his wife hoeing potatoes and other vegetables in the garden. He, too, sits at his ease on a self-binder doing the work which required six or eight men when I was a young man; while his wife is possibly sweltering in a filthy cow stable doing the milking, also lugging the milk, two pails at a time, to some inconvenient arch or cellar, where the stairs of the same may be unsafe and dangerous, even without a load.

The farmer at the present time threshes his grain with an improved separator in a day or two, while his wife may sew and knit all winter. The farmer, too, has much leisure for gossip at a neighboring country cross-roads store.

The old "four-square" garden and its enclosed pail fence, with beds and walks between, must be abolished as a nuisance and a hindrance upon the farm in this progressive age. The modern fruit and vegetable garden is now a rectangular piece of ground, about six times as long as it is wide, located in some protected spot, as near as possible to the kitchen; here horse and plow does the digging; harrows and pulverizers the raking; hand seed drills, the planter and wheel

hoes, the summer cultivation; with these appliances, men and boys find plenty of time to do all the work, and the cheerful, tidy wife gathers the fruits thereof with a grateful, happy heart.

The architecture of farmers' houses has not kept pace with improvements in other buildings. The house often being located at quite a distance from the others, making the location more or less lonely. The interior should be arranged so that the living room would be large enough for all to assemble during the long, winter evenings; with an abundance of good reading matter, music, games for the children (no home is complete without them), so that all desire for study and amusement could be gratified. Connected with this room there should be a conservatory, from which the good wife and her associates may take much comfort in growing beautiful flowers and plants to make the home more attractive. Windows should be hung on pulleys to lower or raise without difficulty. Stairs always straight, with low risers and broad steps and railings at the side. Make sewer connections from both stories of the house, thus saving much labor for that kind mother whose work seems never done. Water, bathrooms and closets can now be had in every farm home, where rain falls and good drainage is available. One of the most intelligent members of the Board of Agriculture informed me to-day, that he had recently put an extra gutter about half way up the roof of his mansion, to convey the water caught in it to a tank in his garret, from which they have an ample supply for closet, bath, etc.

The kitchen is by no means the least important apartment. It should be large enough for the family table, well ventilated and with plenty of light, water at hand and perfect sewerage for all slops from the dish bench. Stoves should have water backs, furnishing hot and cold water as desired; also kindling and fuel should be within easy reach, ready for all emergencies. The entrance to the kitchen is the most important of all, however; this is likely used twenty or more times to any other portion of the house, and should be from a porch or platform where vessels could be temporarily placed until a convenient time to remove them. At the steps should be a shoe scraper and broom. Farmers, sometimes, have soiled boots, the mud from which, if left outside, will lessen much the labor of the wife within. Near to the entrance of the kitchen there should be a bleaching ground well covered with grass and kept clipped with mower; also a reel for drying the clothes, or perhaps better, a permanent clothes line, thus avoiding the necessity of putting up and taking down the line for the weekly wash.

To lessen the labor of the farmers' wife, there should be a good, quiet horse and a low, comfortable carriage always at her command, for a restful drive with her family or friends, as occasion may occur. An hour's exercise often adds much to the health, lessens the hum-

drum of household duties and brings out a glow and beautifies the complexion by inhaling the pure atmosphere filled with oxygen and ozone, thus giving new life to the system, vigor to the nerves and happiness and contentment.

Among the evils that confront many wives, and very largely add to their discomfort, is the drinking and tobacco habit. I have seen many good homes so contaminated with the odors emanating from these unnecessary habits, that the members of the family carried for hours the fumes in their clothing. For an example: We have a friend who visits our house and is a great smoker, although he very carefully lays down his pipe or cigar before entering; the odor remaining after he leaves is so objectionable, that airing the room is necessary for the family's comfort. How men, and some women, too, can become addicted to these expensive habits, I cannot conceive. Men tell me that a good cigar is a great luxury; but they forget how much discomfort and extra labor they give their wives. If they receive so much enjoyment from this habit, methinks, the least they could do would be to hand the wife, each time they indulge in this habit, an equal amount of money, so that she, too, might have some luxury; if for naught else, it would be a slight remuneration for the very disagreeable, dirty work of cleaning cuspidors and wiping off stained spots from furniture and carpets.

Now, brother farmers, allow me to plead with you on behalf of many oppressed wives and daughters. See to it that they are fully supplied with conveniences and improved household implements in keeping with those brought to the farm. And when you have thus done your duty in that direction, as you should, your domestic happiness will be largely augmented and the drudgery of farm life dispelled.

The address was heartily applauded.

Chairman Hiester. "The Ornamentation of Home Grounds," by Prof. George C. Butz, of State College.

Prof. Butz (who was received with applause), said: Mr. Chairman, Ladies and Gentlemen: I was asked by our worthy Secretary of Agriculture to prepare a paper, and I selected the subject announced by the Chairman. Since I stand before you, and realize who are in this audience, I feel that it is almost useless to discuss this question; because, having been in the homes of many of you, I know that there is much about the ornamentation of home grounds you already know, and, therefore, this subject is perhaps a little out of place.



## ORNAMENTATION OF HOME GROUNDS.

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By PROF. GEO. C. BUTZ, *State College, Pa.*

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Reform is easy when a welcome atmosphere has been created. Scientific discoveries are made when the world stands in need of them. We quicken our pace in the race of life when we realize that our neighbors are steering ahead. An atmosphere welcoming the improvement of our home grounds already exists, and it is remarkable how rapidly reform in this regard springs up in evidence. The millionaire with his large estate and princely mansion adorned with costly ornaments, could not create this atmosphere; but when the busy breadwinner, the merchant and artisan, yielded to an inborn love for home, there were hundreds and thousands like them ready to be awakened to a realization of their opportunities and duties to their families and communities. The merchant left the apartments over his store to erect the comfortable home in the suburbs of his city. The mechanic left the custom-made tenement house by the factory for his own modern cottage where the air is pure, the grass is green and the sky is free from smoke. Then came other changes. The railroad stations were surrounded with shrubs, flowers and grass. School properties were made delightful playgrounds with shade and verdure. Arbor Day created a new sentiment in many a thoughtless mind. Village improvement societies, called into play the power of organizations to extol the merits of trees and grass. And lastly, the Civic Committee of the Woman's Clubs, is noticeably arousing a love for the beautiful, a regard for the healthfulness and a thought for the comfort of others in communities.

This reform, though most marked in cities and towns, is penetrating rapidly into rural districts; but while an occasional farm home might be chosen for the pleasing picture it presents because of the closely clipped lawn, the groups of flowers and shrubs, the protecting trees and clinging vines, there are yet hundreds of farm homes standing in Pennsylvania, guiltless of tree or shrub, exposed to winds and scorching sunshine, shunned by birds and boys who love the voice of nature.

Rural life has always been recognized as the most healthful and the most poetical of all human occupations. It is most closely asso-

ciated with nature; but if nature is not to be respected and cherished, she will afford but little comfort or inspiration. No occupation has been sung into poetry more than that of the farmer:

"How blest the man who in these peaceful plains  
Plows his paternal field; far from the noise  
The care and bustle of a busy world!  
All in the sacred, sweet, sequester'd vale  
Of solitude, the secret primrose path-  
Of rural life, he dwells; and with him dwell  
Peace and content, twins of the sylvan shade,  
And all the graces of the golden age."—Michael Bruce.

Successful work in ornamenting home grounds is the result of careful planning and intelligent calculation in which grades, forms, foliage and color are the principal factors. Sometimes accidental results are truly picturesque and pleasing; but the great majority of attractive home grounds are the product evolved from the underlying principles of the art of landscape gardening.

#### LOCATION OF THE HOUSE.

The first problem which arises, is usually in the selection of the site for the house. In times past, it would seem, that many a farm house was located where the land was too poor to grow a crop, too rocky or too steep to plow, for no regard was shown for comfort or ornament around the place. The house should stand in the best spot of all the farm, for all our labors have their inspiration in the home; there we take our rest, our sleep and refreshment; there are our friends and loved ones. In times of storm it is our shelter; in sickness, it is our hospital. Then, if there is a healthful spot, a beautiful or convenient spot, it should be devoted to the home. It will be determined first, by the public road, for free access from the road should be easy and graceful. Too often, however, the house is placed so close to the road that the opportunities for adornment are greatly diminished, and the house gathers in all the dust that flies. On the other hand, many houses are placed so far from the public road that no pleasant thought can be associated with them. They are lonely, exclusive, and uninviting. All efforts at adornment would prove insignificant and scanty. If one acre is devoted to the home and garden (and that is none too much), the house should stand fully one hundred feet from the road. This depth of lawn will admit of varied planting and graceful approaches.

The contour of the ground must also be regarded in locating the house, so that the most natural features of the region become an essential part of the plan. Thus may be secured perfect drainage, easy walks and gentle curves. Steep grades in the paths or drive-

ways should be avoided; and many steps and terraces between the road and house are decidedly objectionable in a country home. These are elements of an ancient style of gardening, when stiff formality and geometrical precision were regarded as the essential requirements of good landscape gardening; when all sloping land was transformed into level terraces and all ascents were made by stone steps and sections of perfectly straight and level walks. Such tiresome formality has now given place to easy grades over rolling contours by graceful curves in walks and drives. In level country the ground will necessarily be of the same uniform grade and the task of locating paths is very simple.

Lastly, the house should be placed with particular reference to distant views and nearby vistas, pleasant streams or stately groves, that all these natural glories may contribute to the pleasures of the home. Although the house must be placed with the greatest care and occupy the most prominent position, the barn and other necessary buildings of a farm should be located with no less consideration to insure ease of access from road and house, and to secure good water and protection from cold winds, yet without protruding upon the foreground of the home where even partial concealment is impossible.

#### ROADS AND PATHS.

Roads and paths leading to and from the house are necessities; and yet if properly laid down they may be made as beautiful as they are useful. A driveway from the road to the barn may be as straight as a lane, but when lined on either side with a row of shade trees, it is an ornamental feature of the grounds. The landscape gardener, however, realizing the beauty of a graceful easy curve, will avoid the straight line whenever he does not seriously interfere with the usefulness of the course laid down. For short distances, the straight course is the only reasonable one, but with a length of fifty feet and over, the claims of beauty and utility can easily be adjusted. In laying down the walk from the road to the house the mistake is often made of placing the gate directly in front of the house, thus forcing a straight path. By making the entrance to the right or left of the house we provide for two desirable conditions—a curve in the walk, and the opportunity of a side view of the house as it is approached. If travel is frequent both to the right and left, two entrances can be made for convenience, thus enclosing a front lawn which may be planted in various ways or left in an unbroken turf. If the grounds are extensive, a very effective entrance is made by a dense planting of trees and shrubs, concealing the house from sight until one has fully entered the place, when an unobstructed view of the house, flanked by trees on either side and draped with growing vines, is suddenly presented.



There are a thousand ways of making the approach to a house, and all of them may be simple and convenient; but it is necessary to select the way which is best suited to the grounds and buildings. To enter easily from the highway from either direction, the driveway should be carried into the grounds at right angles to the fence line for about 25 feet, then swinging around the lawn instead of crossing it, approach the house on a line parallel to the front or side, as the case may be. Specific details for a matter of this kind cannot be laid down in a brief consideration of the main principles of the art, for so many circumstances peculiar to each place call for special treatment. No matter how well the walks and drives are located, how graceful the curves, or how easy the grades, their beauty is enhanced by a uniform border of grass, closely clipped and edged to a faultless line. Very good roads are expensive to make and this fact often contents one with the ordinary earth road, which, while the cheapest, is not satisfactory at all times. Where expense is not a troublesome matter, good, dry roads will be made with broken stone foundation, crowned with a good quality of gravel or finely crushed stone. The question of how to make a road, is a complex one and cannot be considered in this brief paper.

#### THE LAWN.

After locating all the walks and drives, a reservation of a suitable surface is to be made for a lawn. This is usually preferred in front of the house, though is more effective at one side. Much as the planting of trees is urged, the fact that an unbroken turf possesses a marvellous charm, is not overlooked. There is a place for the grass and a place for the trees. The beauty of the lawn is enhanced by being skirted with trees which throw their shadows across the even green. It is a mistake to regard the open lawn as a neglected area in which should be placed a fountain or a flowerbed, a bunch of trees or a group of shrubs. The broad lawn is majestic and peaceful; over it, cloud shadows play with sunshine, and white clover blossoms and dandelions hold *tete-a-tetes* with honey bees and butterflies. The grade of its surface may be perfectly level, but the swelling or somewhat concave slope is equally good if all slight hills and hollows are obliterated. Occupying such a prominent place as it does, the lawn should be started with the greatest care, by enriching the soil and using the best lawn grasses to make a permanent turf; then it will outlive the house or any tree. By frequent clipping the grass with the mower, it will preserve a living green from early spring until the approach of winter.



## TREES.

The selection of trees for ornamental planting often appears as a very difficult and expensive part of the work of home adornment. But the proper location of the tree is of greater moment than is its kind in producing good results. If ten species of trees are enough for a place, they may come wholly from our native stock, and if well placed and well grown, cannot be excelled, though the four quarters of the earth be searched. In my recommendations at the Institutes, I have constantly extolled the merits of our common sugar maple. In his recent book on Home Grounds, Samuel Parsons, Jr., ex-superintendent of the parks of New York city, says of it: "For the various beauties and excellent qualities that should pertain to a good tree, the sugar maple should be accorded the distinction of ranking first in the maple family." Associate with this, the rapid growing silver maple, the lofty American elm, the unique tulip tree, the white birch with its gracefully drooping branchlets, called by the poet, "the lady of the woods," the horse chestnut and the sweet scented yellow locust; then for exergreen trees, the most excellent of all conifers, our hemlock spruce, with the beautiful white pine of our forests, and the much planted American arbor-vitae. With these ten kinds of trees we have all that can be desired for any country home; and yet it is evident, the list of available trees in our own forests has not been exhausted of its beauties, for good service may be rendered by the beech, the linden, the ash and flowering dogwood.

If the trees could be planted upon our grounds as full grown specimens, surely we would never see one-half the mistakes that are now made. The Norway spruces would not be locking branches across the front walk or be shutting out of sight a neat cottage home. If any part of the work under consideration demands skill, it is the locating of trees and shrubs (which are usually mere poles and sticks at the time of planting), so that at maturity, years hence, each may contribute a proper share to the beauty of the place. Expression can be given here to only three rules to guide us in tree planting. First, trees should be planted along the street and upon either side of long avenues crossing the grounds. Second, trees should be grouped and massed along the border lines of the grounds. Third, rare varieties of trees with special marks of beauty, are to be placed singly in the curve of a walk or drive, or near a group of other trees. These simple rules cannot be made to cover all cases of tree planting, for here may be needed a dense screen, there a tall wind-break, here an open vista, there a shady grove. Young trees do not indicate the habit of full grown trees, hence an effectual skyline formed by the tops of trees in groups, can be assured only with a knowledge of the mature tree, form and size.

## SHRUBS.

Shrubs are not only beautiful in themselves, but are very desirable as companions for trees. We find them associated in nature, and where they stand closely, an effective wall of foliage, varied in form and color, extends from the grass to the skyline of our picture. In small areas, shrubs must often take the places of trees. Borders of shrubs massed in harmonious variety along the public highway, may serve to catch the dust in summer and make more private the lawn and playgrounds without obstructing distant views from the house. Such a border made of one kind of shrub and planted in a straight row would be very monotonous and unnatural; but with an intelligent selection of kinds, a harmonious combination may be secured which will produce a profusion of flowers from early spring until late in the fall. For such purposes the easy growing, many-colored weigelias, are useful; also the spiraeas, altheas (rose of Sharon), and hardy hydrangea. The barberries, deutzias, and early flowering Forsythias, will greatly extend the period of color in flower and fruit.

## HERBACEOUS PERENNIALS.

No class of plants can give more general satisfaction upon farm home grounds than those known as herbaceous perennials. The variety is so great, they thrive in almost any fair soil, and flower profusely in gorgeous colors. Their foliage is no less beautiful than that of shrubs or trees. The appropriate places for these perennials, are the nooks and corners of buildings, fronting bits of shrubbery or along walls and fences.

Some of the most familiar plants of this class are, the garden hollyhocks, which are too coarse for close viewing, but when in a far-off corner, supported by a dark background, there is nothing more picturesque; the irises or flags, with clean foliage and showy blossoms in white, yellow, blue and brown colors; the lilies, which are always admired and reappear each spring without any special attention. The Tiger lily, the white annunciation lily, and the dwarf red lily, are excellent companions in the flower border. For edging purposes, the garden pink with spicy white flowers in June is a favorite, and the mosspink (*Phlox subulata*), is of a lower growth and comes in purple and pink colors. The list of good perennials is very long and the variety is great, but no place will require a large assortment to make an effective display, for as with trees, a few species well selected and properly disposed will be more satisfactory than a botanical garden of the whole host of them.

## VINES.

Before concluding, I must say a few words concerning vines about the house and other buildings. Nothing that can be planted, will contribute so largely to the natural or picturesque effect of the adornment as vines and climbing plants. Barefaced walls may be concealed behind foliage, windows may be draped with clinging vines, and porches may be shaded and festooned with chains of flowers and leaves. For covering stone and brick walls, the Japan ivy cannot be excelled. It is perfectly hardy, and clings to the walls without supports of any kind. The unique way in which the glossy green leaves overlap each other, is very pretty. This is not a true ivy, but is a Japanese species of the ampelopsis, or, as it were, a cousin to our native Virginia creeper. Our own vine is not to be despised, for it is a rapid grower and possesses many other good traits which make it useful. It is beautiful in summer, while green, and even more so in the fall with its autumn colors.

The clematises, furnish the rarest beauty for porch decorations. The fine royal purple flowers of *C. Jackmanii*, the lavender shades in *C. May Queen* and *C. Gem*, and the immense white flowers of *C. Anderson Henryi* always excite admiration. Another species of clematis of a very different type, is the Japanese Virgin's Bower (*C. paniculata*). It is far superior to our own *C. Virginiana*, because it is more rapid in growth, and more floriferous. The flowers are small and white, but are produced by the thousands. (Applause.)

Chairman Hiester. "The Value of Country Home Life to Young People," by Mr. R. L. Beardslee, of Warrenham, Bradford county.

Mr. Beardslee. Mr. Chairman, Ladies and Gentlemen: If I had been called upon to-night to give a few of my observations, and a little of my experience, upon any of the domestic animals of our farms, or had been called upon to give my method of producing crops ordinarily raised upon our farms, I should feel more at home than I shall to read a few of my ideas penned down during the blizzard week of early February, to be read at an institute in my own town the latter part of that week. By way of keeping your courage up, I will say, I will detain you in this matter only about ten minutes. I have learned to my sorrow, however, that Prof. Butz is a very hard man to follow.



## THE VALUE OF COUNTRY HOME LIFE TO YOUNG PEOPLE.

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By R. L. BEARDSLEE, *Warrenham, Pa.*

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The ultimate aim of every family when starting on the journey of life as a family, is a home. Whatever their advantages, opportunities and circumstances may have been, in this new relationship, life's prospects and possibilities involve aspirations and responsibilities of a noble and unique character. A home established upon the vantage ground of love to God and man, is the purest ideal of heaven and the loveliest place on earth to either king or peasant. From such homes come the men and women who control the destinies of nations and form the fabric of society.

The quality of home life establishes the status of a people. We possess in our country about 6,000,000 country homes. God be praised that from these homes come the most vigorous young men and young women of our land. Fortified with honesty of purpose, integrity of character, physical strength, and a grasp of intellect sufficient to work out a great destiny. The achievements of this outflow from our farm homes have been a thousand times more valuable to the nations of the earth than have been the products of our soil. The underlying principle that gives country homes the lead in establishing a supremacy in the sturdy, enlightened citizenship in this great Republic is their purity of character, their isolation from the enervating influences of city homes, their restful enjoyment of nature's happiest moods and their diversity of location.

Conditions have changed so radically during the past quarter of a century, that steam and electricity have brought to our doors the valuable advantages of city life and left the endless train of miseries that go far to neutralize business enterprise and philanthropic effort. To show the extent of the barnacles that hang upon city life: During the late cold wave, 25,000 mendicants in New York alone were freezing and starving. Every charitable institution in the city was taxed far beyond its capacity. Many large private offerings were made and the Governor of New York ordered provision to be made for their relief and comfort. Those familiar with city statistics, know, that intemperance and licentiousness overwhelm a multitude of their youth. Superintendent Brockway, of the Reformatory at Elmira, informs me that sixty per cent. of the criminals there, came from New York city.



All of the important current news of the day—all of the leading events that transpire in both hemispheres that go to make the history of nations, are wired to our business centres as they occur, and may be laid upon the table at every country fireside of our land in a few hours at an incredibly small expense. The public school and the printing press afford the agricultural class the privilege and opportunity equal to that of any other class of our people to so grasp the trend of events, as to become a prominent factor in the grand problem of American destiny and in the commerce and civilization of the world. The love of liberty that smouldered in the hearts of an English peasantry for a hundred years, found expression in the little band of pilgrims who landed on Plymouth Rock, and there planted the germs of liberty and independence which have grown into such magnificent proportions as to place our mighty Republic in the fore front of the realm of nations.

A majority of the patriots of the Revolutionary War were farmers. All true Americans exult with honest pride over their valor and heroism. The embattled farmers at Lexington fired the shot that was "heard around the world," and its reverberation made every New England fireside a fortress from which has emanated, not only the bone and sinew, but the brains and genius of our people. From Washington to Lincoln, the majority of our illustrious Presidents were farmers.

I have a copy of Washington's "Agricultural Correspondence." Since that correspondence was published there has not emanated from the American press a more complete and comprehensive system of farm accounts. He gives a full detail with results of every field upon his estate of 8,000 acres for a successive term of years. You recollect the ladies of our county took in the languishing scheme of beautifying Mount Vernon. They employed Edward Everett to visit the leading cities and deliver his incomparable address upon the character of Washington; the result of that enterprise was a grand success. The ladies realized over \$100,000.

The idea that farm life has more than its proportion of confinement and drudgery than has other industries, is a mistaken one. The mandate, inexorable, is "Earn thy bread by the sweat of thy brow," not by incessant plodding. How wonderfully this maxim has been simplified in the development of agricultural machinery. So the farmer, in a great measure, may avoid the severe toil our fathers underwent, and thereby afford opportunity to the boys and girls to enjoy recreation and society; to become familiar with the likes and dislikes of plant and animal life; to work in the kitchen garden and actually learn how to produce vegetables; to work in the flower garden and see the necessity of clean culture to make the flowers bud and bloom vigorously; to pet young animals and become interested

in their habits and growth. These lessons are as important to the children of our land as any they can learn.

We all have an ideal home in imagination. Mine is one in the country, away from the incessant turmoil of greed, steam whistles, fog horns, dram shops, squalid poverty, and crime and vice; where the family may gather around the hearth stone in the good cheer of loving hearts; where the innocence of childhood unfolds into purity of character and exalted citizenship; where each room shows evidences of use; where books and papers, and pictures and toys abound; with a lawn where the children may enjoy their childish sport and drink in the beauties of nature. Nothing is more valuable to a human being than a happy childhood.

Since home is a pivot around which revolves a nation's destiny, its benign influence and practical life should stimulate our youth to noble purposes and enable them to avoid the perils of society.

To more fully realize the love of home and the associations of early life of city people, visit stations and docks in the cities in June and witness the outflow of the families into the country by the tens of thousands, all actuated by the same impulse; to live over again the happy days of childhood and youth and store up new blood and vigor to meet the strain awaiting them on their return. A leading merchant of Stroudsburg told me his July and August trade was the most active of the year, for the reason, in a radius of five miles, there were ten thousand city people recreating every season during those months. Yesterday I visited with two very intelligent ladies who were born and passed their early childhood within 50 rods of this sanctuary. Thirty-five years ago, the family removed to a distant city and they now are visiting friends here. Their last previous visit was made twenty-four years ago. They told me that in their sports and pastimes with children here, the uniform loving kindness shown them by both parents and children, left a fruitful source of pleasant memories that they frequently recounted to their children, and which upheld and encouraged them in well-doing and had left a hallowed influence upon their subsequent lives. Such incidental testimony as this is very assuring to parents. To such homes the heart ever returns for rest. Their memory is the last one to weary mortals and recalls the sweet words of our Redeemer, "I go to prepare a place for you, that where I am ye may be also." (Applause.)

Chairman Hiester. "The Convenient Arrangement of Farm Buildings," by Mr. Abner Fague, of Picture Rocks, Lycoming county.

Mr. Fague said:

## THE CONVENIENT ARRANGEMENT OF FARM BUILDINGS.

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By ABNER FAGUE, *Picture Rocks, Pa.*

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In the arrangement of farm buildings depends much of the pleasure as well as leisure of farm life. The first thing to consider, is the location. If the farm is along a road or a road runs through it, the buildings should be as nearly the centre of the farm as possible. The house should be far enough from the road to be out of the dust. The size of the house should be well considered; not too large, nor too small. It should be large enough for five rooms (size to suit the family), as follows: Sitting-room, dining-room, bed-room, kitchen and wood-room on the first floor. These should be so arranged as to go from the kitchen to the wood-room, to the well, to the dining-room, and from the dining-room to all the rooms on the floor, including the hall and cellar. The second floor should be so arranged as to go from the hall to all the rooms on the floor. A house large enough to be convenient on the first floor will make five good sized bedrooms and a bath room on the second floor.

The well should be on the porch, handy to the outer kitchen door. The front door should be towards the road and the kitchen door towards the barn. Care should be taken to light all the rooms as nearly alike as possible. The house should be just high enough from the ground to protect the sills from dampness. It is no unusual thing to see houses built four or five steps from the ground, to please a false fancy of the eye. Think of old, worn-out farmers climbing a flight of stairs to get into the kitchen. The barn should be about one hundred and fifty feet from the house and on a line with it as compared with the road, or at right angles with the road. All the outbuildings should be on a line with the house and barn, so one walk will be sufficient for all. The barn should be large enough to hold all the crops of the farm. A two-story barn is preferable, but a suitable place for a two-story barn is not always to be had. If a two-story barn is to be built, it should be as near on a level with the ground as possible, with an artificial bank as a driveway to the second story. The wall should be three feet high, except the driveway; there it should be the full height of the first story. There should be eight or twelve glass windows in the first story as large as the space between the wall and sill will admit.



The convenient arrangement of the stable adds much to the feeder's leisure, as well as the comfort of the stock. In the arrangement of the stable, care should be taken not to obstruct the view. No studding should be higher than the manger, which should be three and a half feet from the floor. The horse stalls should be twelve feet long from manger to wall and five feet wide. The mangers should be one and a half feet wide at bottom and two and a half at top. A tight bottom should be put in the mangers two feet from the top and at an angle of forty-five degrees towards the stall. It should be planked from the floor of the stall to the bottom of manger, so the horse can not get his feet under the manger. A space of four inches should be left above the bottom of the manger, and in front, so all hayseed and fine dirt will fall on the floor in front of the horse. The partitions between the stalls should be four feet high and eight feet long. Horses will stand much quieter if they can see each other, provided they cannot get their heads together. The cow stable should be nine feet from manger to wall. The stalls should be five feet long and four feet wide. If a platform is used for the cows to stand or lie down upon, five feet is about the right length. The platform should be eight inches above the floor of the stable. A much better stable is one with nearly a level floor and plenty of straw. These are for convenient and comfortable stables. If, however, you want to economize room, some other plan may be taken.

You will notice that I have looked some at the construction as well as convenience of farm buildings, for the reason that you must first have the construction right, before you can have the convenience. Every barn should have water inside. If running water cannot be had, a well should be dug (or drilled), in the most convenient place. If the well is dug, it should be walled out of the water, the pump put in place and flat stone placed on the wall. Make a box of oak plank ten inches square; place this around the pump, then fill the well up with the earth taken out. If care is taken to cement the well and around it, no bad effect will be had. More labor can be saved by having the water handy than any other one thing about the barn. The carriage and tool house should be large enough to store away all the machinery of the farm. In the arrangement of the outbuildings, care should be taken to systematize the space, and in that way, save labor. The corn crib should be over the open wagon shed. Lath the shed with roofing lath one inch apart and you have the best corn crib that can be built. The happiness of farm life depends on what you make it; so with the convenience of your farm buildings. Build your house with an aim to convenience, then use it. Do not close it up six months of the year and live in a shanty. Build it for its use and not abuse. "Throw up the windows, open wide the door,



let the sunshine of happiness in, and much of the discontent of farm life will disappear."

Mr. Notestine. Why is it that you would put the water for the barn inside, and, while you are digging a well to supply the water for the house, you would put it at one end of the porch, and not in the kitchen.

Mr. Fague. From the fact that there is more or less sloppy water that would thus get down into the well. I have seen a great many wells in kitchens, where water is almost sure to drain into them that is not fit to be used. In a barn you do not meet those things as you do in a kitchen. I think the well is much better outside, under the porch.

Chairman Hiester. "The Principal Crop—Our Families," by Mr. J. B. Johnston, of New Wilmington, Lawrence county.

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## THE PRINCIPAL CROP—OUR FAMILIES.

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By J. B. JOHNSTON, *New Wilmington, Pa.*

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We are a class of producers. One makes a specialty of one crop; another of something else. The constant aim is to grow what we can produce to the best advantage. One farm is particularly adapted to a certain crop, and your inclination leads you to that crop; you can produce it in the greatest perfection and dispose of it to the best advantage. You naturally consider that your most important money crop. Another man, differently situated and differently inclined, makes something else his most important money crop.

But there is one crop we are all producing with greater or less success—a crop for which there is an ever increasing demand—a crop the supply of which, will, apparently, never equal the demand, and of which we will never hear the cry of over-production: I mean the crop of trained, thinking men and women.

This is, without doubt, the most important crop; the one for which all other crops are grown. The same principle holds good in the mental and moral world as in the animal and vegetable, that cultivation, training and nourishment must begin early, and be followed methodically, industriously, and patiently. The influences and sur-

roundings of life on the farm are more favorable to produce a well rounded character, than are those of any other calling.

Health is a prime requisite in the usefulness of this crop; for no matter how much time and money we spend in cultivating it, it is next to worthless without health. A sound mind is necessary, but it must be accompanied by a sound body. We should teach our children the laws of health; teach them to exercise common sense in the matters of simple hygiene; that exposure to draughts or sudden cooling when warm, will result in cold; that a neglected cold results in pneumonia and death; that clothes should not be allowed to dry on the body, and that wet feet are a common source of sickness. Teach them that cleanliness is next to godliness, and the reason why; explain to them that the impurities of the body are constantly passing through the pores of the skin—not only on hands and face, but over the entire surface of the body; that when these pores become clogged with dirt, and cannot carry off the impurities, they collect in the body and cause disease. Teach them the necessity of pure air, and that without cleanliness in our homes we cannot have pure air.

Teach them, also, the necessity of having a supply of pure water, for there is probably no more common source of disease than the use of impure water. We hear more about disease resulting from impure water in the cities than in the country, but it is in the country, just as it is in the city, disease and death follow neglect or ignorance of the laws of health. Too often the well or spring which supplies the family with drinking water, is contaminated by drainage from the barn or sewage from the house. Not long ago a whole family were taken ill with typhoid fever. After three of the eight members of the family had died, it was discovered that the water of the family well was full of typhoid germs, although to the taste it was, apparently, sweet and pure. We cannot say too much nor dwell too long on the necessity of having perfectly pure and healthy water for family use.

Teach them, also, the care of the teeth, for bad teeth cause imperfect mastication, and this, with rapid eating and over eating, cause indigestion and a whole catalogue of suffering, as the result. Teach them the necessity of temperance in all things, eating, drinking and working, and the necessity of total abstinence from all intoxicating drinks. Youth is the formative period of life, and if boys understand the harmful effect of intoxicating drinks, even in small quantities, they will be less liable to form intemperate habits. Teach them that a disregard of any of the laws of health is a sin, a violation of the sixth commandment, and will be punished by suffering or death, or both. If we would all exercise common sense in our eating, drinking and working, one-half the doctors of the land would have to go into other business, and the other half would not hold so many farm mortgages.

Next in importance to health and essential to it, is cheerfulness. Cultivate cheerfulness in yourself and in your family. Make the surroundings cheerful. Make the home, in reality, a home; not merely a place to eat and sleep in. Let no room be too good for the family. Spend the evenings in social family enjoyment. If the home was what it should be, with parents willing to give encouragement to youthful pleasures and games, there would be less desire on the part of our young people to spend the evenings in other homes or in questionable places. If you would have your family together in the evening, devote part of the time to their enjoyment in games, in reading aloud, and having them read aloud. If there is musical talent in the family, cultivate and encourage it. Longfellow says:

“Music is the universal language of mankind.”

He also says:

“Music’s the prophet’s art;  
Among the gifts that God has sent,  
One of the most magnificent.”

Music is one of the most magnificent means of uniting our families around our own fireside. What more beautiful sight than a family singing together, songs of home, songs of love, songs of country or of heaven. And in after years, when the children have gone from the parental roof, they will always have pleasant recollections of the time when they sang the favorite songs by father’s fireside.

Use the means to interest the young people in the affairs of the farm. Boys soon begin to want something of their own; they want more than merely what they can eat and wear. Let them have some of the farm stock for their own, and when it is sold, don’t put the money in your own pocket, but give it to the boy, and teach him how to use it. One reason why some young men become spendthrifts is, that parents do not teach them how to spend money and how to save it. Money is kept from them until they arrive at manhood; hence, they lack judgment, knowledge or experience in handling it.

Young people sometimes get the idea that life in the city is so much easier, and boarding so much better, that they tire of the farm and farm boarding. Parents can do much to prevent this notion. Nowhere can living be so pleasant and boarding so good and wholesome, as on the farm. All the year the farmer’s table should be liberally supplied with vegetables in season, and with small and large fruits in their season. Too many persons put off from year to year the planting of small fruits, thinking it will be such a bother to cultivate them. There never was a more erroneous notion. A little expense for plants, a little care and time for planting and cultivating them, will give results beyond your expectations. These things add to the cheerfulness of the family. Even the work of caring for the



growing plants will give the boys a hopefulness they had not before; and the girls will gladly pick the berries and prepare them for the table—glad and proud to do something that add so much to the pleasure and health of the family. A family which, for the first time, has an abundance of small fruits for a season, wonders why they were content to do without them so long, and will make a great effort not to be without them another season.

This crop has mental wants as well as physical, which we must supply. Give the family the very best education our means will afford, and the most important part of our family education is acquired while in the home. The mother's influence has more to do in the formation of the child's character in the first few years of its life, than all other influences and agencies combined. No more delightful task falls to a parent's lot than drawing out the young mind.

"Who can tell what a baby thinks;  
Who can follow the gossamer links,  
By which the manikin feels his way  
Out from the shore of the great unknown,  
Blind, and wailing and alone,  
Into the light of day?"

Teach a child to observe. Oh, how much of the pleasure of life is lost to one who goes through it with his eyes shut. There is beauty in every flower, in every blade of grass, in every tree. Observation is a habit which is easily acquired, but, not unfrequently, is never acquired. A few questions from the parent to the growing child will start the observing habit, though trivial questions they may be. How many bars in the sitting room grate? This question might not always be answered correctly by a ten year old boy. How does the cow get up? How does the horse get up? How many petals or colored leaves on a peach blossom? Take a peach branch and show a boy that you can never find a bud exactly opposite another, but that each bud is a little further around and up on the branch until the sixth is exactly above the first one. Let him see that this is not a "hit and miss" arrangement of nature, but that this is the case in every peach branch. Show your children the beauty of a perfect flower, with the wonderful provision of nature for the care of the little bud through the winter. Show them that hybrids or crosses are produced by removing all the stamens from the bud that you want to make fruitful, securely covering the bud so that bees or other influences cannot interfere with your experiment. Then, when the proper time has arrived, apply to the pistil a little of the pollen from the other plant. The result will be fruit exactly similar to other fruits on the tree, but seeds of this fruit will produce a cross between the two trees. The observing habit, if acquired in youth, usually re-



mains with a man through life, and always adds to his happiness and usefulness.

Teach them perseverance. Do not allow a boy, even in his play, to be overcome by slight obstacles. Let the young start in life with the determination to do well everything they undertake, and as far as possible, undertake nothing unless they mean to complete it. It is not always best to literally "fight it out on this line, even if it takes all summer," but in the main, that is the correct principle.

Teach them obedience. No boy is fit for citizenship until he has learned obedience, first to the laws of his parents; next to the laws of State and nation. Teach them patriotism; not merely Fourth of July and Decoration Day patriotism, but true love of our country, resulting from knowledge enabling them to say, I am glad and proud that I am an American for America. It is the best country in the world, and show them that the strength and glory and pride of our nation is its trained, thinking men and women.

Teach them politeness; not merely the kind that is put on and off like a Sunday suit, commonly known as "company manners;" but the kind that is put on and worn in the home and out of it, until it becomes part of one's self. Let us not think of politeness as being merely polished manners; that is only the form of politeness. True politeness is a heart trait. It is perfect unselfishness and perfect love, showing in our manner and conversation, the kind regard for the comfort and happiness of others. Selfishness and heart politeness do not exist together. Love and true politeness go hand in hand. Let us also have the outward forms of politeness. Practice them yourself and require them of your children, and they soon become a second nature. "Thank you" and "please" are little words—words every boy and girl can say; yet they are total strangers in many homes.

Teach them honesty in all their dealings; not because, as the old saying goes, "honesty is the best policy," but because honesty is right and dishonesty is wrong. I don't give a cent for the honesty of the man who says he is honest because it is the best policy; for when he thinks it is the best policy to be dishonest, there is no principal to restrain him. We should be honest from principle; honest, not only with our fellow men, but with our farm. Dishonesty towards our fellow man may escape detection, but nature always discovers when we deal dishonestly with our soil, and punishes us for it.

Teach them self-respect and respect for our calling as agriculturists. As long as we do not respect ourselves and our calling, and carry ourselves worthy of the respect of others, we cannot blame them if they withhold the respect from us. There are times when we cannot wear "company clothes." We must dress for our work. But when the evening comes, put away the working clothes and the working

thought, and spend the evening with the family as other business men do. The day is past, if indeed it ever existed, when a farmer has need to slave from daylight until dark. Farming is a business and must be managed by trained, thinking business men on business principles, and men are unfit for business who habitually slave for sixteen hours every day.

If, then, the crop of trained, thinking men and women is the most important one, let us put forth our best efforts to have it up to the standard, mentally, morally, and physically. (Applause.)

Chairman Hiester. "The American Farmer as a Factor in Our Government," by Hon. Gerard C. Brown, of Yorkana, York county.

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## THE AMERICAN FARMER AS A FACTOR IN OUR GOVERNMENT.

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By HON. GERARD C. BROWN, *Yorkana, Pa.*

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Mr. Chairman, Ladies and Gentlemen: I feel that I should preface the little I have to say about this subject, on this occasion, with an apology. When I received the invitation from the honored Director of Institutes of this State to prepare an essay for this meeting, I did what is very unusual for me to do in this connection, I went to the trouble of writing out what I expected to say. Whether it was bad fortune, or good fortune, on my way here those few words that I intended to use as my remarks were lost on the train. Perhaps it was bad fortune, because if the papers had not been lost, I would have been certain to have confined myself within the limits fixed by our chairman. Therefore, I hope that I will be reminded of the rule if I pass beyond the limit of my time.

The tribute that the gentlemen upon this stand, and especially the gentlemen from Bradford and Lycoming counties, have paid to the great American agricultural system and to the inestimable advantages which it has presented, seems to me to have covered the ground which my address should take. I listened to the gentleman in his very eloquent description of the patriotism which he would teach our children, not only a Memorial Day patriotism, but a patriotism which proceeds from genuine love of our country and its institutions. We say America is the first country in the world. Then

Americans should be the most patriotic people in the world. What makes this government worthy of the respect, of the devotion and of the patriotism of the inhabitants who live in it? It is the fact that this government is the guardian of their interests; it is the fact that the people impress upon that government the virtues which they possess. Just so far as the people who constitute the government are influenced by right principles and unselfish interest, just so far will they be able to impress their own characters upon that government and influence it; just so far will they succeed in making the government worthy of their love, and worthy of their devotion.

It is our fond boast that we have the greatest and finest country in the world. That is not an idle claim. The fact is we have the greatest extent of arable land under one national domain in the world; and not only that, but the greatest variety of soils, the largest lakes, the longest rivers, and the most extensive plains; and with these things we have a reason to know and feel that the American people are the greatest people that have even been established under one national government in the world. If so, what are the elements which have made us so? I say it is the American farmer who has done this good and most marvelous work. Standing here in Columbia county, on the banks of the Susquehanna, and casting our minds in retrospect only about 150 years, what would we see as the then condition of this beautiful, prosperous and fertile region, and this community, so distinguished for the excellence of the character of its people, and their progress, and in all that constitutes American civilization? Then it was a wilderness, roamed over by the red men of the forest. Then there was the same river that flows here to-day, the same soil and perhaps the same fertility that they have here to-day. But, my friends, mark the difference! This great change has been brought about by the earnest, conscientious and virtuous character and effort of the people who settled this country, and redeemed it from a wilderness.

What is true of Columbia county, is true also of all of the counties of the State of Pennsylvania; a State that has not been left behind by any State of the Nation; a State which my honored friend from Centre county says "is an empire in itself." I say, that the farmer has been predominant in producing this great citizenship, and claim that he has done this not only in Pennsylvania, but throughout the United States. Therefore, we have just reason not only to be proud of our country, and proud of the deeds of our people, but proud also of the part which the American farmer has performed in the development of this country.

I listened to the beautiful description of the American farmer's home; I listened to the excellent discourse of the gentleman who



preceded me upon that principal crop, "the families that are raised upon our soil;" and I felt indeed as if nothing I could say in the line of extolling the American farmer as "a factor in our government," could add to the force of what was said by that gentleman.

But I wish to consider this subject a little further along this line. The question assigned me, as I remember, is "The American farmer as a factor in our government." One of the gentlemen who preceded me upon this platform, spoke of the time when our judges, our statesmen, our presidents, and our congressmen—when the great men that founded our institutions, and all that has tended to make this a great and free country, came from the soil—were American farmers. That man, who as stated, left in his memoirs a most elaborate work upon the management of his great farm, General George Washington, was a typical American farmer. I want to ask you if the American farmer remains the important factor in that government that he was at the time of which I have spoken, and of the time which was so well spoken of by the gentleman before me? I may well say that it was with a curious feeling which I cannot express to you, that, on a visit to Washington not more than two years ago, I was present at a meeting of the Committee on Agriculture of the House of Congress; and I learned to my surprise that that committee, I believe, consisting of about 30 members, was not entirely composed of farmers by any means; because, as my informant assured me, he did not think there were enough farmers in the entire Congress to constitute the single Committee on Agriculture.

In this great country, Iowa is perhaps at the present time, the greatest agricultural community in all the United States; close to it comes Illinois, the great Prairie State; and then Indiana, its nearby neighbor, and Ohio, the Buckeye State. I speak of these four particularly, because they are most exclusively agricultural states, carved out of the wilderness in the life time of some men now living, taken from the original prairie—they embrace more than the fifth part of the wealth and the population of our country, and are represented in Congress by nearly 100 members—90 members, if I remember right. How many of these men, who represent these, or ought to represent these great agricultural states, are farmers? Iowa has not one; Illinois has one farmer, I believe; but he lives in Chicago. I think Ohio is classed in the present directory of Congress as having one farmer; and I believe that Indiana has two. I think at most there are but four farmers out of those four great agricultural states chosen by the people to represent their interests in the body which has control of the interests of this great country. I sometimes feel as if the farmers do not realize how directly they are interested in legislation; that is to say, how great an influence the legislation of the country has upon their interests for good or for ill. If they could realize that,



it seems to me that they would exercise a little more care in seeing that their interests are attended to in matters of legislation, and take a little more trouble to see that they are represented at our seats of government, by having farmers to represent them. This may be said to be a somewhat selfish view for a farmer to express—because I am a farmer, and I am speaking as a farmer to farmers. But it is not so, my friends, for this reason. That government is best which does the greatest good to the greatest number; or, in other words, which serves the interests of the majority of the people. Now, the farmers of the United States constitute directly and indirectly the great majority of the people of these United States. Those directly engaged in farming, according to the last census, constitute about two-fifths of all those who are engaged in gainful pursuits in the United States; not quite one-half. But those who are dependent on the farmers, and who have to look to the farmers for subsistence (whose prosperity makes theirs), constitute all together, a large majority. Another fact: The majority of the people of the United States are dependent upon the prosperity of the farmers; and, therefore, that which tends to make the farmers prosperous, does the greatest good to the greatest number of our people. We have seen a most striking illustration of this in the last two or three years. You know that when the boom started two years ago in farm products, how it loosened the nation from the despair into which we had settled. Every farmer engaged in tilling the soil virtually realized the fact that he was producing the substance of our people, and the commerce of our country, at an actual loss. When this was the case, then there was a nationwide gloom; because the farmer was not getting paid the cost of his production.

This is not the time to go into statistics, nor to take up the figures that the State Board of Agriculture of the different states have been able to furnish us, as to the actual amount of losses sustained by reason of the staple crops of the country—the corn, the wheat, and the cotton—yielding prices to the producer of less than cost. But when that dark day passed away, a brighter day took its place, because we realized that once more we were getting paid for our labor. When we saw wheat go to \$1.28 a bushel last year, what an impetus it gave. Every interest in the whole country responded to it; and the boom in prosperity which that caused by the increase in value of farm products was not confined to the farmers alone; but it opened every channel of trade, and started every idle mill; and to-day the beneficial effects of that boom have not disappeared. As you travel through the State you see the smoke ascending from the stacks of factories that had been idle for years. I regret, and you regret, we all regret, that the prosperous condition of our class was not maintained. I cannot help but feel when I go to town, as I did last week,

and find that that it takes a little more than four times as much wheat, to buy a bale of fence wire, as it did a year ago,—I repeat I cannot help feeling and knowing that the present industrious condition in town cannot continue to last, because they are dependent upon prosperity in the country, as has been shown in all of the history of the past.

Speaking more directly upon our business, and our employment as farmers, and as factors in our government, I wish to reiterate, that I wish we could realize the importance of exercising our influence in legislation—the obtaining of that which is fair and just to farmers—because on that depends so greatly our prospects for future permanence. I do not think there is anybody but ourselves to blame if we do not exercise our proper influence in legislation. If we do not, I am satisfied that we cannot maintain our condition—the condition which we have a right to expect as independent farmers and independent citizens in our country.

And I want to say further, that the farmer's influence in legislation must be sustained, because it is a healthy influence. How could it be anything but healthy, when it proceeds from such homes as you have heard described, and homes under such conditions—the best of influences, such as you have heard described on this stand to-night? To what other source can we look for health in the State? Prince Bismark said two years ago to a delegation of German farmers who waited upon him—that man of blood and iron; that representative of titled aristocracy; that political autocrat of the old world—he said to those farmers who waited upon him: “My friends, the cities are the canker sores of the body politic.” And he warned the farmers of Germany of the evil influences which they might expect to proceed from those centers of corruption. What is true there, is true here. The words of Prince Bismarck should be a warning to the American farmers. And I feel, my friends, he did not realize more than many dwellers in cities now do, that if we are to have a better government—and God knows that we need it—it will have to be more a farmers' government. Enough events have transpired in the last six months to satisfy us that there is room for improvement in this country. If we are to have a better and more economical government, it is through the influence of the farmers that we must proceed; we must look to him to take the initiative and to inaugurate measures of reform; men look to the pure and fresh blood of the country, to the homes of the country, and to the American farmer; aye, to the Pennsylvania farmer, to draw them out of the slough and to battle for their cause, and their interests.

I wish you felt the responsibility. Doubtless many of you in this audience do realize it. I know that many of you are inspired by the same sentiments which I have endeavored

to express here, and, therefore, it seems to me it is wasting your time, and taking up the time due to others who intend to speak to you, to continue. I wish, my friends, that you would take this theme specially to heart, and use your influence, both at your homes and throughout the State, to make our farming people realize the responsibility which rests upon them. If our government is to be kept pure, it is for the farmers to keep it pure. And if it is corrupt, it is our farmers alone, so far as I can see, under Providence, who can restore it to its proper condition. We can not do it separately or individually, or jointly, though we have influence, unless we can devise some means by which we can use our influence as a body. Unless we can pull together in some great and grand effort, in which can be combined our whole strength, we cannot succeed in this matter. And it is necessary that method be used. I realize that we must, if we intend to be successful, combine our forces; and that we must do this soon for the sake of our country, and pure government in which, if it is to be maintained, we must continue to take a very important part.

But if my friend does not call me down, I must call myself down, for I have spoken a full half hour. But I wish I had had a couple of hours upon this subject, to give expression at greater length to the sentiments I have so feebly expressed.

Chairman Hiester. We have two topics on our programme yet—"The Rural School Problem," by A. P. Young, Esq., of Millville, Columbia county, Pa., and "Our Country Schools," by Alva Agee, Esq., of Cheshire, Ohio.

Mr. Young. Can I not be excused? It is late, and the people are going home anyhow.

The Chairman. Under the circumstances, I feel like excusing you. I would not like to talk under such circumstances.

It was understood that the two aforementioned papers be published in the proceedings.

At 10.10 o'clock, P. M., the conference adjourned.

# FARMERS' INSTITUTE LECTURERS' CONFERENCE,

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AT BLOOMSBURG, PENN'A.

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Friday, June 2, A. D. 1899.

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The conference of Farmers' Institute Lecturers was held in the court room at Bloomsburg, Columbia county, beginning at 8.30 o'clock; A. M., Friday, June 2, A. D. 1899, Colonel John A. Woodward, of Howard, Centre county, presiding.

Secretary Hamilton called the roll of State lecturers, and the following answered to their names:

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## LIST OF SPEAKERS ENGAGED IN FARMERS' INSTITUTE WORK IN PENNSYLVANIA DURING THE SEASON OF 1898-9.

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|                                      |                                 |
|--------------------------------------|---------------------------------|
| J. W. Allison, Mercer.               | Joel A Herr, Cedar Springs.     |
| Dr. H. P. Armsby, State College.     | C. L. Hoyt, Elkland.            |
| R. L. Beardslee, Warrenham.          | J. B. Johnston, New Wilmington. |
| J. F. Boyer, Mt. Pleasant Mills.     | L. W. Lighty, East Berlin.      |
| Hon. Gerard C. Brown, Yorkana.       | Hon. A. L. Martin, Enon Valley. |
| J. S. Burns, Clinton.                | C. L. Peck, Coudersport.        |
| Prof. Geo. C. Butz, State College.   | Thomas J. Philips, Atglen.      |
| Calvin Cooper, Bird-in-Hand.         | R. S. Seeds, Birmingham.        |
| Hon. N. B. Critchfield, Critchfield. | A. Judson Smith, New Millport.  |
| Hon. S. R. Downing, Goshenville.     | O. W. Stoughton, Prospect.      |
| Dr. Wm. Frear, State College.        | W. H. Stout, Pine Grove.        |
| Prof. S. Heiges, York.               | Col. John A. Woodward, Howard.  |
| Gabriel Hiester, Harrisburg.         |                                 |



## SUPPLEMENTAL LIST OF LECTURERS.

INSTITUTE SEASON OF 1898-99.

|                               |                                  |
|-------------------------------|----------------------------------|
| S. F. Barber, Harrisburg.     | G. G. Hutchison, Warrior's Mark. |
| E. S. Hoover, Lancaster.      | A. J. Kahler, Hughesville.       |
| M. E. Conard, West Grove.     | Dr. M. P. Ravenel, Philadelphia. |
| L. J. Farmer, Pulaski, N. Y.  | Jason Sexton, Spring House.      |
| Frank N. Moore, North Orwell. | J. M. Wittman, St. Mary's.       |
| M. W. Oliver, Conneautville.  | A. P. Young, Millville.          |

### DEPARTMENT LECTURERS.

Prof. John Hamilton, Secretary of Agriculture.  
Major Levi Wells, Dairy and Food Commissioner.

The following were absent:

### STATE SPEAKERS.

|                                      |                               |
|--------------------------------------|-------------------------------|
| Alva Agee, Cheshire, O.              | Harry Hayward, State College. |
| Prof. W. A. Buckhout, State College. | Enos H. Hess, State College.  |
| L. A. Clinton, Ithaca, N. Y.         | W. F. Hill, Westford.         |
| J. A. Fries, State College.          | John McDonald, Delhi, N. Y.   |
| John Gould, Aurora, O.               | H. H. Russell, Belle Valley.  |

### SUPPLEMENTAL LIST—ABSENT.

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|--|---|
| James Q. Atkinson, Three Tuns.         | Dr. C. E. Goldsborough, Hunt-<br>erstown. |
| W. M. Benninger, Walnutport.           | Dr. George G. Groff, Lewisburg.           |
| Wm. B. Bigler, M. D., Tilden.          | Dr. S. P. Heilman, Heilman Dale.          |
| M. S. Bond, Danville.                  | George W. Hood, Indiana.                  |
| George Campbell, Green's Land-<br>ing. | W. Horace Hoskins, Philadelphia.          |
| C. E. Chapman, Peruville, N. Y.        | Jasper T. Jennings, New Milford.          |
| Prof. C. B. Cochran, West Chester.     | W. B. K. Johnson, Allentown.              |
| Joseph Crist, Critchfield.             | Abner Fague, Picture Rocks.               |
| Dr. J. P. Edge, Downingtown.           | Florence R. Kenderdine, Lumber-<br>ville. |
| William M. Ely, Solebury.              | W. H. Knouse, Swales.                     |
| G. R. Forlke, West Chester.            | John H. Landis, Millersville.             |
| Luther Gates Beaver Centre.            |   |

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| Col. W. Penn Lloyd, Mechanicsburg.  | Mrs. Sarah Tyson Rorer, Phila.       |
| Edwin Lonsdale, Chestnut Hill.      | Oliver D. Schock, Hamburg.           |
| Col. George Nox McCain, Phila.      | Dr. N. C. Schaeffer, Harrisburg.     |
| R. E. McDaniel, Springdale.         | R. F. Schwarz, Analomink.            |
| M. E. McDonnell, State College.     | Noah Seanor, Plumville.              |
| Dr. J. M. Martin, Mercersburg.      | R. S. Searle, Montrose.              |
| Miss. M. Alice Meyer, Clintondale.  | A. G. Seyfert, East Earle.           |
| T. O. Milliken, Cornpropsts.        | O. P. Shaver, Friedens.              |
| George A. Mitchell, Vineland, N. J. | John L. Shawver, Bellefontaine, O.   |
| William L. Nesbit, Lewisburg.       | Robert M. Simmers, Phoenixville.     |
| C. D. Northrop, Elkland.            | W. C. Sloan, Sloan.                  |
| Isaac Parry, Breadysville.          | Wellington Smith, Mifflintown.       |
| Mrs. Mary Parry, Higbee.            | T. B. Terry, Hudson, O.              |
| Joseph H. Paschall, Ward.           | W. H. Thompson, Wyalusing.           |
| J. H. Peachy, Belleville.           | Jacob Twining, Newtown.              |
| Daniel H. Pershing, Stauffer.       | Emil Ulrich, Stroudsburg.            |
| J. B. Phelps, Conneautville.        | Prof. Geo. C. Watson, State College. |
| Geo. T. Powell, Ghent, N. Y.        | James A. Waugh, Pittsburg.           |
| Joseph Beatty Powell, Shadeland.    | S. M. Wherry, Shippensburg.          |
| Anna E. Redifer, State College.     | Annie Wittenmyer, Sanatoga.          |
| Helen Stowell Johnson, Corry.       | J. S. Woodward, Lockport.            |
| Mattie Reeder, New Hope.            | A. P. Young, Millville.              |

## DEPARTMENT LECTURERS—ABSENT.

Hon. A. L. Martin, Director of Institutes.

Dr. H. T. Fernald, Economic Zoologist.

Dr. J. T. Rothrock, Commissioner of Forestry.

Dr. Leonard Pearson, State Veterinarian.

Mr. Hiester. Mr. Chairman: I move that we postpone the reading of the papers that are on the programme for this morning, and that we proceed at once to the consideration of the list of questions, and take up these papers later in the day, if we have time. My reasons for making this motion are these: These papers will all be printed in the report of the proceedings, where we all can read them. These questions are very important, and have a direct bearing upon the institutes to be held next winter. It is the important part of our meeting to have these read and answered. Then, many will leave this afternoon; and if we do not take them up this morning, they will not be answered at all.

The motion was seconded by Mr. Critchfield, and unanimously agreed to.

Chairman Woodward. That being the case, we will proceed at once with the list of questions. We have fourteen of them. I wish the

convention itself would signify the time that shall be given to the opening, and then to the discussion of each of these questions.

Mr. Stout. I move that those who first discuss the questions be limited to five minutes; and that those who follow be allowed only one minute each.

The motion was duly seconded and agreed to.

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## STATE LECTURER'S QUALIFICATIONS.

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Chairman Woodward. With that understanding, we will proceed to the first question, which is, "What Qualifications Should a State Lecturer Possess?" This is assigned to the gentleman from Monroe, Mr. Schwarz.

It was announced that late last evening Mr. Schwarz received a telegram calling him home.

Secretary Hamilton. Dr. Armsby had that question at first, and it was turned over to Mr. Schwarz.

Chairman Woodward. We will ask Dr. Armsby to answer the question.

Dr. Armsby. Mr. Chairman: I do not know that the essential qualifications for a State lecturer are very much different from those of any other lecturer at an institute? It seems to me I could sum up my ideas very briefly. I think a State lecturer at a farmer's institute ought to know more about the subject than the audience does. If he does not, I cannot see that his instruction will be of very great value. That seems to be a very small thing to say; but I think it goes to the root of the matter. Perhaps it is not essential of the State speaker, or leading man, that he shall know more than his audience necessarily on all subjects; but upon the subject on which he undertakes to instruct them. I look upon one of these farmers' institutes, not as an integral, but as a part of the whole mass; and I think it is very important that each lecturer should be an expert in his particular line; that he should not only know more than his audience, but a great deal more, and more than he puts into his paper. He should know the one subject very thoroughly from personal contact with it, to show that he is not giving theory, but the results of practical application; so that he will be able to follow up any ramification in answer to any questions that such a paper will give rise to. That is the first qualification. The second, is the ability to tell what he knows, so as to interest and instruct those to whom he speaks. Now,

that is in part a natural gift, and in good part the result of training. He should use simple, English language, putting questions plainly, as well as other expressed thoughts, use short sentences, and stop when he gets through. (Applause.) I think this sums it up—to have something to say, and to know how to say it.

Mr. Cooper. Practical information is one of the greatest qualifications.

Mr. Critchfield. Another qualification, I think, is to have the ability to pour oil upon the troubled waters. Sometimes a disturbance is impending at a meeting, and the State lecturer ought to be able to lay his hand quietly on those men, and in such a way as to make the parties feel ready to bridge over the difficulty.

Mr. Herr. It seems to me it is a very important point that we should be able to make ourselves distinctly heard by everybody in the house.

Mr. Hoyt. Another very important qualification is not to put the fodder too high. Confine yourself to ordinary language; leave out, as far as possible, scientific and technical terms, so that you shall be understood by everybody.

Dr. Ravenel. Another very important qualification is to know when to stop.

Mr. Hantz. His address should be clear cut and short.

Mr. Oliver. I think another important element is to be able to hold his temper; to never take offence before an audience on account of anything that has been said. Neither should he rely on the manager or chairman to help him out on any subject that he thoroughly understands himself.

The Chairman. All the suggestions are important.

Mr. Hutchison. He should not talk too much and crowd the local help out.

Mr. Peck. He should be very careful not to antagonize the position which an associate State lecturer has taken.

Mr. Patterson. Not to criticise the local help.

Mr. Johnston. If not able to answer a question, say so.

Mr. Eves. To have fair health, so that he can endure all sorts of torture from impure air.

Mr. Stout. He should not expect a royal canopy, or to sleep on downy beds, or to ride in highly upholstered wagons all the time.

Colonel Demming. He should avoid trite sayings and stories, known as "chestnuts."

Prof. Heiges. With all these qualifications embodied in a single man, in the language of the psalmist, I would say "Behold the perfect man!"

Mr. Critchfield. Perhaps he should not snore.



Mr. Dye (of New Jersey). If you are going to put the standard so very high, will you not have to increase your pay-roll?

Mr. Beardslee. Be thoroughly in earnest with your subject.

Mr. Brown. That he should realize and understand what the people really need.

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## SELECTION OF TOPICS.

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Chairman Woodward. That question seems to have been pretty fully answered, and we will proceed to the next one: "What Range of Topics Should Be Selected for Your Institutes; or, in Other Words, What Ought to Be Taught?" The gentleman from Chester, Mr. S. R. Downing, will please answer.

Mr. Downing. Mr. Chairman: I think this somewhat depends upon the locality—what the farmers need to know, and what they want to know—and it is a glorious fact that the farmers are continually wanting to know. Now, we have a dairy community in Chester county, or dairy people. They make butter in part, and send milk to the city in part. Of course, that subject is never exhausted with us, and the continual cry is, that we want to know more on that subject. Of course we do not care so much about the breeding of horses; that is not a very interesting subject to us, although we may drive nice horses, and have them well bred and all that. But we purchase our horses, and do not breed them. So it depends upon the locality in a great measure.

Now, I visited a thorough farmer in our county recently, Mr. Carter, and it was very interesting and very helpful to me, and profitable as well. Mr. Carter has two sons. He himself runs a fine dairy of Guernseys and Jerseys; and his boys, in addition to the creamery, grow carnations, and other flowers, as well as vegetables, tomatoes, and so on; and it was a very remarkable visit, so far as I was concerned. Now, they would want to know all about these subjects, particularly, as pertaining to that locality. So I think those who have charge of the selection of subjects should be made up of committees from the localities in which the institutes are to be held. The subjects should be left to them, mainly. I do not know that I need to say anything further than to add, let the range of subjects be applicable to the locality.

Mr. Johnston. Mr. Downing has stated that which is important to be remembered, that the questions to be discussed are questions pertaining to the locality; also home life, and the home, including

home decorations. These, and conveniences for the wife and such things, can be profitably taken up in every institute in every county in the State.

Mr. Piollet. I think the topics for discussion in institutes should be largely those that are in the minds of the people—topics of the day—something that we want to know about. We should have lecturers who can talk upon subjects we are deeply interested in in our localities. For instance, I live in a county that is largely engaged in dairying. We had three State lecturers there last winter, not one of whom, I believe, ever milked a cow (laughter), and could not tell us anything about dairying. Now, we want you to send one man up into our county who knows something in that line.

Mr. Sexton. I think it is a very important question, the range of topics to be selected for our local institutes. I think it is a matter, as has been said, that should be left entirely in the hands of the local committee, to adopt topics suitable to the conditions which surround that community, and on questions in which we are intimately interested. We have had the same experience as my brother Piollet. Two or three years ago, living in a dairying neighborhood, the speakers who came to talk to us did not know anything about dairying at all, and our people were disappointed, as they expected to hear something from those men upon the subject in which they were most interested. Our farmers largely earn their livelihood through dairying, yet when they came together they heard lectures and addresses in another direction altogether. The topics selected ought to refer to local affairs.

Chairman Woodward. All the State speakers will learn something about dairying before they leave.

Mr. Kahler. You have to respond somewhat to the tastes of the farmers; otherwise their attendance at all our institutes cannot be relied upon. If you will refer to the Bulletin, you will find out the topics that the men assigned to your locality are conversant with; though it once in awhile occurs that the topics are not put down on the schedule, and so it sometimes happens that men are assigned to our counties who do not have lectures on the very subjects we want; consequently, we cannot call upon them to speak on those subjects. We have had a round-up here this week. Let us have something agreed upon that will be acceptable in almost every county, if not every county. For instance, we could have something on the duck, and something on other poultry. We look over these lists, and we find that nearly all these men are not, apparently, prepared for that line of instruction. I think you are nearest right, when you consult parties in the vicinity of where the local institute is to be held. Here is a list of topics laid down, and the names of the men who are experts in those lines. Some are experts on the lines you want them

to talk about. I think the preparation of this list is right; but I think a good deal of care should be taken so that men shall be selected who are best acquainted with the topics desired in the various localities.

Mr. Herr. I have in vain looked over the list for some one of the State speakers who is competent to talk about tobacco culture. There is one end of our county where a man would secure an immense audience, if he was assigned to go there and talk on that subject. I have been asked to hunt up such a man; but I have failed to reach anyone who is an expert in that line.

Mr. Hutchison. A number of gentlemen have spoken, but I do not think they have touched upon the subject, as to what ought to be taught in the institute. The first thing should be on the subject of fertility. That ought to be the starting point. That is the bank account. That ought to be one of the leading subjects. Then, in dairy-ing sections of the State, they ought to be instructed on the subject of stock raising, milk producing and butter making; and the various branches of horticulture would be applicable there, as fruit growing. Then, after the farmer has been instructed along these lines, it is well to have on your programme instruction on the home, better roads and better schools. These are subjects that ought to be taught in the farmers' institutes. A man who serves as a State lecturer ought to be able to give instruction on several lines; but we cannot expect an instructor to be up to date on all these subjects. However, on some of them he should know as much, if not more, than any of his hearers.

Dr. Frear. A farmers' institute is a place where men and women are to be instructed; but we cannot instruct unless we secure interest; and we cannot secure interest unless we can give something worthy of attention, and in a clear manner. Then, we cannot be satisfied with our institutes, until men become proud of their art, as an art. I think men should not be satisfied with simply learning what John Smith does across in the next county, and going there to be taught. There are higher results to be accomplished. The question is how to accomplish them. One way is by learning to modify a process in the milk and butter division, where each farmer has a field of his own. Now, each one may be surrounded with conditions peculiarly his own. If we adopt one method, to the exclusion of others, it seems to me that we will not accomplish what is intended. Each man in the neighborhood ought to endeavor to improve upon that which he is most directly interested in. First, to touch upon the dollars and cents he may be able to earn. In the second place, to stimulate to greater pride in one's art. So, if we want to do anything simply for the sake of doing it better, and to elevate in every institute in which the lecturer takes part, we should give satisfactory answers



to the questions which are constantly rising in men's minds; and the good results of the answers are sure, if men intelligently and conscientiously do their work. If we keep that in mind, we will elevate those we come in contact with in this important institute work.

Dr. Heilman (of Cameron). Last year we found in the question box, "Why is not sheep raising taught in these institutes?" The question becomes important as a means of knowing what we can present at the next institutes. We could not do anything with that with the institute then in hand, but it is an idea for the future on the subject of what ought to be taught.

Mr. Hildebrandt. I would like to ask the Chairman if it is not possible to provide lecturers on subjects which are important, but which are not set down on the list? For instance, on the subject just referred to, we find in our county, relative to the sheep industry, that not one-half of the lecturers can talk on that subject.

Chairman Woodward. The Chair will answer that it would be a good plan to consult the speakers and ascertain whether they are competent to talk upon that subject.

Mr. Hanna (of Columbia county). Could not the manager have the privilege of looking over the country, and finding an expert to take up that question, if there is no expert on the list?

Chairman Woodward. That is his privilege, provided he arranges for his compensation.

Mr. Seeds. I think there are three prominent questions in a farmer's institute. My first topic should be fertility, as I am a crank on that question. The definition of crank is a man who sees the truth before others, and sticks to it. The second topic, should be the home, and the next education. I find farmers living on farms on which their fathers lived, and they are not in as good a financial condition as they were; neither are they as well educated, proportionately, as their forefathers. The day was when the farmers living in one of our valleys, educated their daughters in the adjoining seminary. There is not one there to-day. As I go over the subject in thought, it seems to me, Mr. Chairman, that our farmers' institutes should get down to these men, because the main object is to educate the farmers through these institutes. Then, the first thing to be taught is fertility; the next the home, and the next education.

Dr. Conard. It is very necessary to keep an eye open to the fundamental principles underlying success; for instance, in dairying and fertility. But there are a great many leaks on the farm entirely overlooked, by which there might be a very handsome profit realized. I think we could teach, or leave with the institutes, an additional thought, by which we can gather up fragments that generally go unnoticed. Now, the subject of shoeing horses; the effect of sanitary dairying on the markets (a little seed thought that is generally not



heeded in dairying), or in the application of food for plants, and to increase the fertility—these are not embraced in the points that are so generally discussed. We are apt to forget the side issues.

Mr. Beardslee. I have been chagrined on looking over topics for discussion at institutes. I have a wonderful sight of pride in this matter, because I live quite near the New York State line, and I attend institutes in that State. I would be very sorry to say that their meetings are better than ours.

Chairman Woodward. Don't say it.

Mr. Beardslee. As I said, I have been in their institutes, as well as ours, and I find that we are more methodical and cover more ground and we have more system in our institutes than theirs. Notwithstanding, I look over the lists, and see institute after institute in different parts of our State, and the topic of sheep is not mentioned in one of them. Now, sheep are among the most important factors in securing fertility, and among the cheapest for that purpose. We have thousands of acres in this State that is now fit for nothing else than for sheep pastures.

Mr. Critchfield. We ought to remember that the day for sheep is just dawning. We have passed through a period when sheep growing was not very profitable. There will be plenty of sheep talk, I have no doubt, the coming year.

Mr. Dye (of New Jersey). I want to speak a word in behalf of the State management. This is a State work, as gentlemen remember. Some here have emphasized the importance of having the preparation of the programme left altogether to the local committee. Does that exclude any exercise of the veto power on the part of the State officer who has charge of the institute work? Then, I desire to refer to another subject. The question of State taxation. Ought it to be brought out in State institutes? Are you sure that should be done?

A Voice. I am.

Mr. Dye. What are institutes gotten up for? To advance practical agriculture, and inform farmers as to their business, and educate them, if you please, to a higher standard. Is it not in the power of farmers to call meetings at any time to consider the subject of taxation, and consider it by itself? What business have we to aid in a matter of State government? In our State it will not do. The question would come up immediately, if the Republicans were in power, and it would be the same if the Democrats were in power. What right have those people to use the funds of the State for that purpose? I think you ought to call special meetings relative to taxation, and let the questions on agriculture come in connection with the questions of institute work.

Then it is an important question to consider what ought to be left out, as well as what ought to be put in. This is a pretty hard thing to do in a great State like Pennsylvania, and to know what is best. We are as yet in the initial stage, or in our infancy; but after awhile we will be able to get just what we want, if we make good use of what we have. I speak thus as the friend of a man, Prof. Hamilton, who has had much experience in this work himself, that there must be some discrimination and much care in the preparation of this work. But then we must be careful of our local work.

#### HORSE SHOEING.

Mr. Brodhead. In reference to horse shoeing, there is not a solitary lecturer, so far as I know, on that subject. But it is an important local question. Horse shoeing is a practical question that should be brought before the people; for there is hardly a man within the sound of my voice but what owns horses. So far as I know, the subject has not been discussed, with the exception of a little time taken up with the subject in northeastern Pennsylvania.

#### TAXATION.

Mr. Brosius. While the question has been going around, What topics should be discussed in institutes? I think the gentleman who occupied the floor last on my right touched one topic that is all important. While it is interesting to discuss the raising of things, and the fertility of the soil, the disposal of the product of this labor is a very important matter, and the sum total of it all. Now, how far should we be protected? How far would it be profitable? How far would it be judicious for this Department to take up subjects. Our Chairman would say that is political economy, and probably would lead to partisan warfare. But the discussion of economic questions, undoubtedly, belongs to this Department of the State—not from a partisan standpoint; not from the fact that my party shall win, or the other party shall win; but what is the absolute truth, and upon what do we base our methods of taxation? If there is anybody in the State interested in taxation, and the equalization of it, and that each man should pay his just proportion, it is the farmer of this great Commonwealth.

The Chairman. We have the one minute rule for discussion; and the gentleman's minute has expired.

Mr. Brown. I move that the gentleman have another minute.

The motion was duly seconded and agreed to.

Mr. Brosius. Now, this is a question that is all-important, and to be discussed right here. Here is the place to discuss it among men of both parties, with the head of our Department with us, and with of both parties, with the head of our Department and the State lecturer.

ers with us. It is a most fitting place to discuss this question, right here. How far ought we to go? To some it may not be a question of interest; to others it is an absorbing question. We have men in Pennsylvania who understand the subject of taxation thoroughly, and they are anxious to bring it before the people. And if brought before the farmers of Pennsylvania, they will discuss it, and decide it right; they will not impose burdens upon the people that should not bear them. At the same time they should not bear burdens themselves that ought not to be borne by them.

Now, gentlemen, I do not want to take up your time; but of all the times this has been presented to the agricultural people of Pennsylvania, this is the best time to discuss this question. It is a question that will not down in our local institute.

Mr. Peck. I accidentally learned in Warren county last winter the importance of the discussion of sheep growing. I found there that there is a singular interest springing up on the subject of the care and growth of sheep; and I think it will be wise to include that topic in the list for next winter's institutes.

#### HONEY.

Mr. Stout. There is another subject that is entirely neglected in Pennsylvania, although one of the most important in our State, and that is the honey bee and the honey crop; because that is an industry that pays better than almost any other, if managed properly—for the bees support themselves and work for nothing.

Mr. Allison. The different sections of the State have different interests; and in traveling over the State we find out the different interests. What is of interest in one section is not of interest in another. Some sections are passing through the transitory period. Some have been lumbering sections, and the lumber is gone. They are going at something else, but they do not know what is going to be profitable. Some think it will be fruit growing, while others have faith in some other line. A State lecturer ought to be able to understand these things, and teach them what is best to be done.

Mr. Heyburn. The interests of our county are largely agricultural. I would advise the director of institutes to revise his list of subjects. We had some trouble where a lecturer was called upon to speak upon the creamery subject, and he would not because he said he was not qualified. I think the farmers should book themselves particularly upon the subject of oleomargarine, and the law relative to its manufacture and its sale. This is a subject that is crippling one of our industries; but I believe the new law will do much to encourage our butter interests. We as farmers should encourage the State Board, and especially Major Wells, in carrying out these laws.

I would like for just a minute to endorse what Mr. Brosius has said



on the question of economics. When farmers meet, we should discuss the greatest industry, and the greatest subject relative to our welfare. Taxation is the one feature that is crippling our farmers, and I endorse what he said.

#### POULTRY.

Mr. Northup. Mr. Chairman, and Gentlemen: It seems to me that the most important topic to be discussed in a farmers' institute has been entirely neglected and overlooked, and that is poultry. I am a friend of the chickens. (Laughter.) The ladies have come to me, and said: "Why don't you have the poultry matter discussed? Our chickens are dying with cholera, or with gapes, and we want to know what to do for them. We want to know how to have the largest basket of eggs in January; but there is not a man in Pennsylvania who can tell us how to do it." Now, then, send out a man who knows something about the poultry business. Once in a while we can go to State College and learn something about this thing, and a man then knows what he is talking about.

A Member. There is one right over there, Prof. Heiges. (Applause.)

Chairman Woodward. We have a hen man here who I know has talked twenty-five audiences deaf, dumb and blind on the chicken question. (Laughter.)

Mr. Northup. He has not got up into northeastern Pennsylvania; but has been somewhere else in the garden of the State.

Mr. Eves. Mr. Northup has been attending institutes in our section, and the gentlemen through there thought he was a reverend gentleman, perhaps on account of his fondness for poultry.

Mr. Hiester. The reason that Prof. Heiges is the most popular institute lecturer is, because he can talk chicken, and the ladies are all with him.

Mr. Northup. But the gentleman has never been in our section.

Mr. Herr. I suggest that we do not undertake to talk about all these subjects at one institute.

#### KNOWLEDGE BEFORE TEACHING.

Secretary Hamilton. I do not want to interfere in any way with this discussion. I am here to learn. These questions are of great practical importance—they are very important. Few realize how difficult it is to meet the various needs of the several counties in Pennsylvania. Perhaps there is no State in the Union that has a greater variety of industries than our own; and to organize institutes in the various counties that shall give all the information that



these gentlemen think should be taught, every year, in every institute of Pennsylvania, is out of the question. We cannot do it. We can teach two or three things in one session; and we can go on for a long time, giving one or two things at a time. But it will be impossible to take all or nearly all at one institute. Where is the man in Pennsylvania that understands the tax question? You can go into the city of Philadelphia, and I will wager the best hat you can find that you will not meet a man who can tell you off-hand the system of taxation in Pennsylvania. (Applause). Ask all these politicians and statesmen, and they don't know. Now, then, how are we going to educate the country people upon a question that we do not understand. I think it is better to get a specialist to write a paper on the tax question, putting down just what he is going to say; and have another specialist do the same thing. If you want to read a paper on the subject, send it in, and we will hold you right down to responsibility for what you do say. But don't go and get up a discussion until you get the facts, and have a clear-cut remedy.

Mr. Piollet. Great reforms do not come around in a day. The abolition of slavery was not brought about in a short time. It was only after long discussion by the people that we succeeded in wiping it out. If we take up the subject of taxation, and talk about it, and demand a reform, in time we will bring about the equalization of taxation which we have been trying for years, but in regard to which we have thus far failed. We all know what has been done in the Grange for a tax bill in the Legislature, and the progress that has been made. Not long ago, when our old friend Taggart was living—and a grand old Roman he was—he had his bill passed the House, but it was not passed through the Senate. There was a condition in the House that led to considerable stir; and the Speaker of the House said, "if you will let up on this thing, we will do something—the railroads will not agree to it—we will make a law, or appropriation whereby we will increase the public schools appropriation to \$6,000,000 a year." And that was embodied in the bill.

Mr. Boyer. If we cannot teach all the topics, let us take fruit culture first; and let agriculture and poultry, and so on, wait until we know all about fruit culture.

Mr. Beardslee. We should have nothing to say about fruit until we first look into this subject of taxation. We have had much discussion the past four or five years on this very important matter. I would suggest that you get a copy of the Ford bill, just signed by the Governor of the State of New York——

The Chairman. The question is "What range of topics should be selected for your institute; or, in other words, what ought to be taught?" There is not to be any discussion on any topic.

Mr. Beardslee. I was going to come to that.

Mr. Critchfield. I move you, sir, that the discussion of this subject close.

The motion was duly seconded and agreed to.

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## SUCCESSFUL TEACHING.

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Chairman Woodward. The next subject is, "How Shall the Teaching Be Most Successfully Presented?" Mr. Hiester.

Mr. Hiester. Mr. Chairman, Ladies and Gentlemen: I don't know whether I exactly understand this question. It seems to me it was covered very well by the discussion of the first topic. If such men are secured as were recommended by the answers to the first question, this subject can be very well left to them. But I will briefly say, in the first place, it should be presented by a person who thoroughly understands the subject himself; and it should be presented in the simplest possible words. We should remember that the average farmer is not a scientific man, and is not acquainted with the scientific terms; and wherever it can be done, scientific terms should be eliminated; and it should be presented with the fewest possible words in the shortest possible time. Probably the most effective way of presenting a subject is by object lessons. In institutes, object lesson teaching can be used. We can use charts, and can bring before an audience a good many natural objects to illustrate the subjects. I think the introduction of the actual working of the Babcock test some years ago, brought to the farmers the actual loss that they sustained in the skimming of the milk and the churning of the cream more forcibly than it could otherwise have been done. I think natural objects should be brought in, when practicable, to illustrate a point. The blackboard is a very important means. By the use of a piece of chalk, and a few simple lines drawn on a blackboard, an instructor is able to make clear a point in a few minutes that could not have been done so well in a half day's argument. Again, when figures are used, they should always be placed on a blackboard, or a chart. For instance, if the subject of commercial fertilizers, or the subject of feeding, or anything of that kind that requires the use of figures, either a blackboard or a chart should be put up in plain view of the audience, so that the audience will not have to carry the figures in their minds, but always have them before them. Sometimes a short, pointed anecdote can be used to illustrate; but it is a very dangerous method. The danger is, that when he finds a story has taken well,

to use it for the purpose of bringing out the story only, and the substance of the subject is lost sight of. The tendency is to use a story for the sake of the story, rather than to use the story to illustrate the subject, and in this way it does a great deal of harm. Now, I think these are about all the ideas that I wish to advance on this subject.

Chairman Woodward. There are others just as important on this question.

Prof. Heiges. I want to emphasize, as well as to give a postulate on object teaching. I do not think anything has been more effective than going into a field or orchard, and taking the diseased branches, and explaining the origin and method of treatment for the removal of the pest, that in western Pennsylvania is known as the *sphoeria morbosa*, or black knot. It was very prevalent. It was a matter of interest to know how they could be destroyed, and the penalty that might be imposed upon them for not carrying out the law.

What is known as "stag horn wood" was discovered at one place. I didn't know what it was; so the next morning a sample was produced, and we found it was nothing more or less than the shallow-leaf plaintain. And the same way with the broom sage. It was a surprise to find out that the farmers upon whose land it was growing did not know anything of its life's history. The proposition that followed was to make a small herbarium, that we might take samples along, so that the farmer might know his plant foes. I say we can better use these, than attempt to describe the plants and their diseases.

Mr. Hantz. In the instruction of institutes, as in the common schools, the first essential is, that the man shall know what he is going to talk about; and then in such a way that all can understand him. A great deal in the institutions of learning goes over the heads of the pupils. It should be of such a character as to be understood by everyone in the house. If we are not able to do that, we will miss our mark.

Mr. Cooper. I think there is no better method of reaching the mind than through the object lesson; and the more we have of that, the more good we will do. If we do not have an object by which the mind can take it in, it is gone in a short time. The mind is treacherous. If we have it presented to the eye, it will be remembered. The method of grafting—I said I would demonstrate that by an object immediately after dinner, and presented to them three or four different methods. I never did anything in my life that created as much interest as that. After the evening session they just popped open. Some of them took specimens home. The more we do with the ob-



ject lessons, the more good. I think a blackboard and charts are very desirable.

Mr. Heyburn. We are troubled in our district with *dry* in the wheat. How are we to apply a remedy?

The Chairman. The Chair suggests that the gentleman sticks strictly to the question.

Mr. Stout. In regard to this teaching, how can we most successfully present it? Now the presentation of a question should be in language to be understood by the people who hear it. In my community, in a large district around me, the people understand the English language. A great many more understand the German language much better. If the Department sends Yankee speakers, our farmers will say: "Who is coming to speak?" I will tell them Secretary so and so, or Deputy Secretary so and so, or Professor so and so. Then they reply, "O, I won't come, then." "Why not?" "Con net ferschtee." ("If he comes, I can't understand him.") It is so in presenting these questions, and in these discussions; they should be presented in that language that the people understand. Of course, I do not know that the Department has any German speakers to reach them. There are communities that need such instruction more than any other.

Secretary Hamilton. We have had lectures in German repeatedly.

Mr. Dye (of New Jersey). I simply want to emphasize the suggestions that have been made of the use of object lessons in the way of diagrams and charts, and by other methods, where they can be used. Judiciously used at a lecture, they are a great help; but we do not want too many. A young lady gave a lecture on pure foods. She had one end of the room covered with charts. I told her it would not do; there were too many. I remember of Dr. Twitchell lecturing with two cows on the platform; and it was a great success. Of course, we cannot always have cows at our farmers' institutes; but one way to present the truth is to get the teacher or lecturer to have his audience understand in the least possible time. Sometimes a lecturer may lecture by the hour, and his hearers not understand thoroughly; but if a question is put, he may soon get to their level.

The Chairman. There will be but one more speech on this subject.

Mr. Lighty. I am very glad to know that the Pennsylvania Dutchman is to have a chance. Mr. friend, Mr. Stout, just needs a good Pennsylvania Dutch lecturer. The Pennsylvania Dutch belt, typified as "the pie valley," needs this Dutch lecturer.

Our friend from New Jersey says we must come down to these men; and we should come in such a way that they have our full sympathy. Now, we are a very peculiar people indeed, and once we Pennsylvania Dutch get any sympathy, we can get along. I like those



Irish fellows over there; and it is with the descendants of these people that we build up so well.

Mr. Dye. Prof. Smith, of New Jersey, has illustrated lectures in Entomology.

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### THE SAME TOPICS YEARLY.

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Chairman Woodward. The next topic to be discussed is No. 4; "Shall a Speaker Discuss the Same Topic Each Year?" Mr. Cooper is to answer.

Mr. Cooper. Yes, and no. We answer yes, if the subject is of vital interest in all districts, and the people do not fully understand it, provided the people in that district want information on that subject. And we answer no, unless the subject is practical. I think that answers the question given me.

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### LENGTH OF SPEECHES.

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Chairman Woodward. The next subject is No. 5, "How Long Ought a Speaker to Talk?" This will be discussed by Mr. J. E. Stephens.

Mr. Stephens. I think that question has been fully answered three or four times this morning. I think the shortest answer to that question is that every speaker ought to know when he is done. Now, there are some speakers who will talk against time. That is of no use at all. In my programme I always have the subjects, and have it appear in connection with the subjects that the paper shall not exceed twenty minutes. If they exceed that time I call them down. The discussion then, after the question is opened, should not be over five minutes. I think you will not be encumbered with long speeches if you adopt that rule.

Mr. Piollet. I think a speaker should be allowed to finish his sentence at any rate.

Mr. Critchfield. If the sentence should be pronounced.

Mr. Piollet. There are a good many speakers who ought to know

when they are done. The trouble is they do not. I think we should impress upon them the fact that they are done. Sometimes they will take a hint and sometimes they will not. If your audience is attentive, and if you have sufficient magnetism in your composition to hold their interest, it does not make any difference then how long you talk. The object is to have them interested in what you are saying, and you interested in them. But if you see them uneasy and restless, and disposed to pay no attention, a person ought not to continue on. The plan then is to stop, both for your own reputation and the welfare of the audience, as well as the success of the institute.

Mr. Hutchison. We have some men up our way who monopolize a good deal of the time of the institute. I have a way of holding them down, by telling them, when they get up, that they can speak a certain length of time, and then they must stop. When that time comes, I generally give them a hint; and when they begin to tire the audience, I usually call them down.

The Chairman. The question is, "How Long Shall a Speaker Talk?"

Mr. Hiester. I think a speaker should stop before he has exhausted his subject. After he has awakened a thorough interest in the subject, or gone far enough to have excited an interest in it, then he should leave the impression on his audience that he has more in reserve. Let him stop then, when he has the interest at a high pitch. That will induce questions, and you will have a better institute. Sometimes facts are more clearly elucidated, if drawn out by questions.

Mr. Critchfield. Upon this subject, it is my opinion, excepting in extraordinary cases, that a speaker ought not to talk more than half an hour. An audience is likely to become weary. Some speakers ought to put in a little more time in thinking what they ought not to say. Sometimes that is more important than what we should say. So we ought, in our preparation, to keep in mind this fact, that we should close up our remarks somewhere within half an hour—as a rule, never to take up that amount of time.

Mr. Oliver. If a speaker should stop every time, as soon as he knows that some of his audience have become tired, I am afraid he would disappoint many of his hearers. Now, our interests are so varied that a speaker, talking on chicken raising, may have a dozen in the audience who are very much interested in the chicken department. The poultry raisers may be very much interested, while others in the audience, not interested in chickens at all, may be wearied. So I think a speaker should have his address boiled down, and, as a general thing, not to talk more than twenty minutes to half an hour. That will enable those in attendance, and who are interested in the topic which he has discussed, to ask questions. We cannot always

get persons to ask questions, when we have exhausted the subject and the audience. By stopping at an early stage, we are more likely to bring out questions, and thus increase the interest on the subject.

Mr. Barber (of Dauphin). I think Mr. Hiester has covered that point fully. When we come before the audience with a paper, just as soon as we can excite an interest, and get the people to asking questions, and we find out what they want, we should stop, and let them put the questions, and continue the subject as long as they want, or as long as it is prudent.

Mr. Clark. It is a very good idea, it seems to me, to make our talks as short as possible. For my part, I do not like to talk over fifteen minutes. In institutes we have an opportunity that we do not have everywhere. We can call upon others to talk on a given subject, if the main address is found to be too short. It gives others a chance. Do not crowd anyone out. It is the most difficult thing to arouse an audience to renewed interest, when the interest has been killed by too long an address. But when everybody is interested, everybody wants to talk. That is illustrated here. Therefore, I am in favor of short talks. They should be short and business-like.

It was here announced that the artist who took the photograph of the members of the conference in front of the court house, just before the morning session, would have a proof of his picture about the time of adjournment at the noon hour, and that those desiring copies could have them at seventy-five cents apiece, provided, twenty-five were taken altogether.

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## PREPARATION FOR INSTITUTE SPEAKING.

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Chairman Woodward. We will proceed to the next question, No. 6. "How Should a Speaker Prepare Himself for Institute Work?" Prof. Butz to first reply.

Prof. Butz. Mr. Chairman: This is perhaps the most important of all institute work, the preparation of the speaker, which has been touched upon in the talks already had. It has been contended that no one should attempt to speak upon a subject with which he is not more or less familiar from a practical standpoint. Therefore, his preparation should begin as many days before he speaks as he can afford. That it should be practical, is apparent to us as we go on in this work. During last winter I heard a very interesting address by one of the speakers on strawberry culture. It was the result of practical experience on the part of the speaker. At the conclusion

of his excellent address, a local man, who followed him upon the subject of fall plowing, said: "Mr. Chairman, I am sorry to have to follow this eminent speaker, because as he spoke of these strawberries the water was running around my tongue, and I wanted to eat some of them. But, ladies and gentlemen, I want to talk to you about something practical." (Laughter.) Evidently to his mind plowing was practical, and the cultivation of the strawberry was not. I think, however, he did not have the words, or the full force of them, in his mind when he said this.

It is true we should base all our talks on experience; and yet, along with that, it is just as important that we inform ourselves of the underlying principles of the science, or of the theory—no matter what the term we use in expressing it—so that we can view the subject on all sides, and not on one side only. It is as well for us to read up what has been written, because that is of value in connection with the results of experience.

We should not wait until the last day for this work. It may be that we will have no suggestions in what we have read from persons who have given thought to the subject; but I think we should have their knowledge, in addition to our own experience, so that we shall be prepared to meet any questions or any suggestions that may be brought out in the talk.

Then I think each speaker should adopt a method pursued by many speakers, to write out his speech, no matter how long or how short; and then reduce it, if too long, making it as brief as possible to cover the ground and be comprehensive, so that it can be presented in twenty or thirty minutes. He should have in that written address many other facts and figures, which would be uninteresting if presented in his talk, but which can be referred to in any contradictions or discussions which may arise. He should have prepared charts or drawings that will enable him to present the truth more clearly than he could by words. Yet he should aim to present the truth in the language which he chooses to use, as well as in the illustrations that he may make use of. He should have the additional help of a chart, whenever it is possible to do so. It is better to hold the attention by matter and manner of expression than by some pictures; and yet I do not want to say that the pictures are not of some value along with the talk, because we use such things sometimes in the illustration of subjects before classes.

He should also, if he has not been accustomed to much speaking, do what he finds our students doing, perhaps at the present time, go out into the woods and deliver his speech in loud tones that would perhaps scare all the birds from the tree-tops. Thus by out-door exercise of the voice, at institutes, persons at the greatest distance from him will hear just as clearly as the person next to him. Then



he should be careful not to pitch his voice to that high key that would be objectionable to those nearby. Then there are rules which are important to a person with a long moustache, because we can often interpret or understand by the watching of a person's lips; whereas a man who covers his mouth with a moustache cannot be heard unless he enunciates very carefully and clearly.

That is all I desire to present—to begin early, choose only those subjects on which you have had some experience, and aim to present one truth very clearly—not for the purpose of occupying twenty minutes, but to impress one great truth upon the audience, that they may carry away one good thing. It is more important to do this than to touch upon many good things, and not present them clearly.

Mr. Dye (of New Jersey). The first step to public speaking should be to ascertain what the truth is, and then to clearly express it. We hear now and then in institutes and other public meetings, "what is he trying to get at?" Or, as the boys say, "What is he trying to give us?" The audience seems to know that he is not touching his subject. I had a speaker at Morristown. I put him on the last part of the programme, so he could talk his full hour. He did, and more. Finally I edged up to him, and said: "Do you know what time it is? It is ten minutes after twelve." "I didn't know that. Why didn't you tell me before?" He had not touched his subject then.

An eminent doctor has said that it is for us to find where the truth is, and to bring it out into the open; and to bring the truth out so clearly as to reach our audience and interest them. A man who has had no experience whatever will know whether his audience is in sympathy with him. If it is not, the sooner he stops, the better.

Secretary Hamilton. A speaker should prepare himself thoroughly, as has been stated; write a good, long introduction, and then leave that off.

Dr. Frear. The matter of local preparation—preparation on the spot—in the neighborhood—it seems to me that one thing of importance has not been referred to. Now, for example, we take the subject of fertility. You have had any number of talks on that subject; and at this stage of the institute work, if you simply give a general presentation of the subject to a locality, you simply say over and over again what has been said before. My idea of a general presentation of a subject of that kind is, that it may be simply a way to cover up a great many subjects. You go into the district, and you find out what the practices of the representative men are in that locality. You see one or two features that they are trying to establish, and you talk under that general head, because a matter of local importance. Now, we can do that with all topics. There are some specific features, and you can arouse interest by treating them in a specific way,

This I refer to, because it has not been touched upon by preceding speakers.

Then the importance of one informing himself on the ground. I thought it well to refer to this class of subjects, and that particular point, of seeking an illustration, and improving the phase of the subject by enlargement; that is a point that ought not to be overlooked by traveling speakers.

Dr. Armsby. "How Should a Speaker Prepare Himself for Institute Work?" I think after he has prepared his address, and left out the introduction of it, that it would not be a bad plan to leave the manuscript at home. I thoroughly believe in the writing of papers where it is at all practicable; but if he can take the stand, and look his audience clearly in the eyes, I think he will be more interesting.

Mr. Lighty. I think the gentlemen should use their own rule. There are certain men who are not capable of presenting their thoughts from a scientific standpoint, because they do not practice their own theories. Those men, before they undertake to speak to others, ought to have practiced what they advocate.

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## REMEDY FOR EXAGGERATION.

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Chairman Woodward. No. 7. "What Is the Remedy for a Speaker Who Exaggerates?" To be answered by Mr. G. G. Hutchison.

Mr. Hutchison. Mr. Chairman, Ladies and Gentlemen: I got into some trouble yesterday; and I hope I will not get into any to-day on this subject. It is rather a delicate subject to speak upon, because we have a number of gentlemen here who are institute workers, and for whom I have the greatest respect. They are men of ability, and they deliver good addresses, and they have done great good in my section. Yet this question is here to be answered, and I will say a word on it; and if I should say anything that might strike some one of their addresses just a little, I hope they will not take any offense at it.

Chairman Woodward. Do not be too tender. Give them fits.

Mr. Hutchison. Then I want you to keep out of the way; I might hit you.

Now, this is an important subject. When a man rises before an audience, he wants to give the best presentation of his subject, and to draw the picture as well as he can. But State speakers should

be very careful. Now, a scientific man can talk, and if we do not understand him at all, we will not know whether he is exaggerating or not. He can go ahead. But a farmer who talks before other practical farmers, must be careful. Suppose that he talks about a home, and the finished character of a house; how to have a farm house, and how it should be built, and everything about it. We expect that man to have that at home. Another man talks on horses, or on barns, how to build them, the ventilation and the principles of air in connection with them. We look to that farmer to have a barn built on that plan. If not, we think he is exaggerating. When an institute man talks, inquiries are made about his home surroundings. The question is, what is the remedy? I would go around in the institute and request some bright fellows to ask the lecturer some questions. It would be a delicate matter to say, "Now, brother, you are exaggerating." That might make him angry. But my plan would be to ask him some questions bearing on that part of his address; and in that way I might bring it to his attention that he was exaggerating, and he might take the hint; and if he could not understand, I would take him back in the yard, and I would explain to him something about the character of the barn, or the hay crop, and that it was an over-drawn picture. That would be the plan I should adopt with such a speaker; and I think that lesson would do him good.

I have not referred to any of these gentlemen personally, or said that any of these things might refer to their talks. I would refer the question in a general round-up institute to some person and have him do it. It is very important what we say to the farmers. They are urged to adopt our plan. They do not live in some back and far away place any more; they are taking the agricultural papers, and reading the bulletins of the State officials; they are keeping in touch on these subjects, and thus they are engaged in better farming. When a man goes before them to speak, he should know what he is talking about, and he should remember that they are reading and talking about the same subject. He should not present false statements. I think the lecturer should not exaggerate in any direction, for it is impossible to make the farmer believe these things, after he has investigated, as he most likely will.

Mr. Critchfield. Mr. Chairman: I would like to ask the gentleman what he would do in the case of a man who talks about fertilizing his farm, and taking hold of the farm and otherwise building it up from the returns of the farm, or the proceeds, when somebody says he keeps a profitable stone quarry, and by selling the stone to the neighbors gets the money whereby to operate the farm? Is that exaggeration, or is it plain fact?

Mr. Oliver. I have been a reader of the "Country Gentleman" for many years, and I remember reading this years ago; A man down



in Missouri was an excellent writer, and wrote a great many good articles. He told us what we should have on the farm; that we should have good buildings, and good fences, a first class apple orchard, with all the summer and fall fruits, and a nice garden. Now these articles caused the readers of that paper to act, and as a result they fixed up their buildings in a great many places; they enlarged their gardens, and raised different kinds of fruits there, and in their orchards. It was a good work done. One of the reporters of that paper visited the writer of those articles at his own home. To his surprise he found an old, rickety house; the barn was not in repair, the fences would not stop an old cow, and nothing in his garden but sorrel. He said to this farmer, "I am disappointed. I thought from reading the articles in the "Country Gentleman" that I would find everything here as it should be." "How," said the farmer, "can you expect us to do all these things, and tell you what you ought to do? It keeps me busy all the time telling you what you ought to have, and what you ought to do." (Laughter and applause.) Now these State speakers tell us what we should have, and what we should do. We know we ought to have what they tell us, and that sets us to work. I am one of those persons who think that the fruit tree agent has done this country an immense amount of good, because we find orchards on most of our farms. We are really benefited thereby, though we did not get exactly what we ordered, perhaps. Though they may exaggerate a little, it is possible that we may be benefited by it.

Mr. Beardslee. Mr. Chairman: I will take a part of my minute in trying to answer friend Critchfield's question. If this gentleman referred to, made \$500 in a stone quarry, and placed \$250 of that money in a bank, where he was drawing 4 per cent. for it, we know just what he got out of that. If in developing his farm he took the other \$250 and bought fertilizers with it, and got the full benefit of the application of those fertilizers, and the results were very favorable, and he received 6 per cent. on his investment—which would be an investment that we would all be glad to get—if he exaggerated in the matter that he did not tell how he came by his money for the purchase and application of those fertilizers, that would not do.

The Chairman. I think Mr. Beardslee thoroughly understands the question of exaggeration.

Mr. Hutchison. I presume the gentleman (Mr. Critchfield), had reference to me. I never owned a stone quarry in my life—I have no stone quarry at all. (Laughter.) I spoke, I think, yesterday, about building up a farm: but I had no stone quarry. But I made a little of it, though, in the way you made some of yours in 1891. (Applause.)

Mr. Critchfield. You must not think anything is personal.



Mr. Biggs. As the man that builds a house is greater than the house, or as the architect is superior to the building that he puts up, so every man in every business must be superior to his business, if he intends to succeed; yet he does not necessarily have to show it all. If a man must exaggerate in the presence of others, he should exaggerate so that everybody could understand. Now, where is our inspiration to better work, unless somebody gives the inspiration, and sets the example? Do we ourselves receive the inspiration that we ought to have? Is there a business man here to-day who succeeds up to his business ideas? Is there a mechanic who does better work than he is told how to do? Is there a farmer here that farms to-day better than he knows how to do? Or is there a farmer here that does as well as he knows how to do? If there is, I am mistaken. I have farmed more or less for fifty years; and I have never put out a crop but, after I have been to work and thought over it, I regretted that I did not take more time and do my work better, and more systematically and not leave so much for Providence to do. I take it that these are not necessarily exaggerations, but representing things truthfully. The man who shoots at the stars will get nearer them than the man who shoots in the ground. (Applause.)

Mr. Smith (of Clearfield.) I think that people who tell stories and allow for shrinkage, do a great deal of harm. (Laughter.) I have been reading about a speaker who raises potatoes at nine cents a bushel, and makes \$300 out of a brood sow, and all such stuff as that. Well, it may be possible in one or two instances, but I think it is an injury; because, when a young man does not make allowance for shrinkage, and does not understand it as those who know more about it, but believes it is true, when he fails, he thinks that it is his failure; while it is not his failure, but the wrong done him by the man who told the exaggerated story.

Mr. Clark. Brother Smith has struck the keynote to the question at last. They fail in the end. One man exaggerates, and one does not. The one who exaggerates, so forcibly illustrates and beautifully portrays that his audience is carried away with the thought that there is a far greater inducement to do as he says than there really is. This speaker will volunteer his information, and it will be taken up, especially by the young, who are anxious to get these things and go ahead. They will accept these things, and launch out on these lines, spreading forth with all their might, or striking out, and then they fail. That is the result of misdirected exaggeration. That is where the speakers ought to be careful. If there is a doubt in the way at all in their experience, in their talk they should say so, and give the other side of it.

Mr. Herr. I was going to say something in the same line, before my friend, Mr. Clark spoke, that there is a great deal of negative

information. When a man tells us of his grand success, and how much money he made out of this and that, and does not tell us anything of the terrible struggle he met with, or the reverses he met with, but gives only one side of the picture, and leaves us to believe that is all we have to do, just to make the effort, and reap the same reward; it is a dangerous species of exaggeration, for before the close of the institute some man may get up and say, "I believe that man is a liar." Now, that man possibly was telling the truth, by his telling what he acquired by a great deal of experience and hard work; but he does not tell anything of the other side, of the peculiar circumstances under which he did it; but he tells us this in such a way that we believe we can do the same thing under ordinary circumstances. Yesterday, when I made that remark, that we should be careful in the selection of efficient presiding officers, I had this in view, to not let such false impressions go out among these people, because it will go out among the people for days. We want to tell the truth; and it is the hardest possible thing to tell the truth.

Mr. Seeds. If a man makes \$12, and we make only \$7.50, there is trouble in our mind on that line. As James Whitcomb Riley says:

"I've always noticed great success  
Is mixed with trouble more or less;  
And 'tis the man who does the best  
That gets more kicks than all the rest."

(Applause.)

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## REMEDY FOR LONG SPEECHES.

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Chairman Woodward. "No. 8. "What Is the Remedy for a Speaker Who Occupies More than His Proportion of Time?" Referred to Mr. Seeds.

Mr. Seeds. Mr. Chairman: I am sorry to say that every now and then we come across a man like this; a man who seems to want to show off his talking ability. He puts me in mind of an old lady who went to take a train at Spruce Creek. She was going some place with her young daughter. While at the station she got into a conversation with another lady, and the train came along. The daughter called to her, and finally pulled at her dress, saying: "Mamma," pulling hard at her dress, "here is the train!" And the old lady replied: "Never mind; there'll be another train after awhile." (Laughter.)

Now then, we have men like that, and it seems we cannot help it;

and they have good reputation in the community. I am sorry that frequently they get before an audience, and do to that audience something like this: There was a man who went to see a girl, and she weighed 225 pounds. During the evening it so came about that he was holding her upon his lap. After awhile she happened to think, and said: "John, may be you are tired." And he said, "No." Then she repeated, "Now, John, ain't you tired?" And John replied: "No;" I am not tired. I was tired awhile ago; I am numb now."

Mr. Chairman, we have men in our communities who get before audiences; and they not only make them tired, but they make them numb. Now, it is a truthful saying that when a man goes to make a speech, there are two things very essential: The first, that he shall have something to say, and, secondly, to quit when he has said it. Some of these men are politicians. I have seen men who had a political bee in their bonnet try to take advantage of a farmers' institute to advance their cause, and I have seen the chairman wearied, and walking around on account of it; but the audience continued to listen, notwithstanding the speaker was talking too long. Now, to stop that speaker, under the circumstances, I acknowledge that it is sometimes a difficult thing to do; but there is no other way than to call the speaker down. You can do it in a gentlemanly way. As Mr. Herr said yesterday, a hint can be thrown out at the end of fifteen or twenty minutes, and his talk can be cut off in that way. If the speaker does not heed the hint, there is no other way excepting to call him down by saying that his time is up.

Mr. Eves. I think the audience ought to assist the chairman; somebody ought to rise to a point of order, to get the chairman to have the speaker stopped. There are several ways by which an audience can assist a chairman.

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## USING OTHER SPEAKER'S MATERIAL.

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Chairman Woodward. The next question is No. 9. "What Is the Best Method to Pursue When one Speaker Appropriates the Material of Another, and thus Destroys the Other's Speech?" J. S. Burns has been designated to answer this question.

Mr. Burns. Mr. Chairman: This is a subject like a good many others, that is difficult to answer in many particulars. When one man appropriates a part of another's speech, and it is intentional, he is

practically a thief, as he appropriates to his own use that which belongs to someone else. Yet what course are we going to pursue in order to have a remedy in this particular? We cannot arrest him in this case; and the only thing that I can conceive of that may be done under the circumstances, would be at that particular time to make the best of the situation, and later on allow him to follow some other calling or pursuit in life. This would be about the only way that I can see by which we can get out of a difficulty of this kind. As has been remarked by someone preceding me, unless you have something particular to say on a subject, it is better to quit. For that reason, I will leave this subject with you, because, as I have said, it is a difficult question to answer.

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## ESSAYS BY SCHOOL CHILDREN.

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Chairman Woodward. The next question is No. 10. "Should School Children's Essays Be Permitted? This to be answered by Mr. W. O. Stoughton.

Mr. Stoughton. Mr. Chairman: In brief, I will answer, yes. And as a reason, they are generally interesting, entertaining and instructive. I think that is sufficient; but I would just like to draw a line as to whose children shall do this. At some institutes it is the bright little children from town who do this work. As I understand a farmer's institute, it is for the instruction and elevation of the farmer and his family, and I would confine these essays particularly to farmer's children.

Chairman Woodward. The Chair is well aware of the force of this point. It has been my experience in a good many places in the State that the programmes were prepared with great brevity—but very few speakers put on. After the programme was thus made up, they put on over a half dozen school children, it was supposed, to fill out the programme; but the result was to run out the exercises to a very great length. There is nothing to be gained by this, except to show off those children. I do not think it is right to extend a programme indefinitely.

Mr. Clark. Do you approve of their being put on the programme?

Chairman Woodward. Yes; but when it is a perversion, I do not approve of it.

Mr. Stoughton. You would approve of it, but not to the exclusion of the leading object of the institute. But I do not intend to take



up any more time. I will leave the question for some others to answer.

Mr. Stout. I would say this: Put the children on the programme. Let them be educated for public speaking, because the next generation will be made up largely of public speakers, and we want a proportionate number from the farmers.

Mr. Heyburn. I think you ought to adopt the plan of getting the children into the institutes. We commence our institute in the morning at nine o'clock, and we have that session almost entirely for the children. We offer them prizes, of \$1, \$2 and \$5, for the best essays. We want to encourage our children to become farmers, and to become interested in these institutes. In these ways we bring the children, and the parents and teachers, and reach others. I would like to have the State take hold of this matter and bring all these children into the institutes. We take altogether farmers' children, offering so much for the best essay; and you would be delighted to see the interest and enthusiasm manifested. And those who are not there will say, "I will go next year;" and another, "I'm going to take my family up next year." We started the prizes five years ago.

Mr. Seeds. I think the children should be permitted to take part in the farmers' institutes. The first reason is, because we create an interest in the neighborhood. They practice for the institute. Another reason is, because the farmers' institute is for the children, for they are the ones who will some day till the farm, and open the throttle of every engine in this land. That is the place for the children. Every bachelor may be opposed to them, and so every old maid; but if there were no children in the land, after awhile where would we come out? (Laughter and applause.) Everything you do in this country is for the children. You cannot ignore them, or crowd them out on the plea of other interests. One of our first duties in connection with our institute work among the farmers is, to look out for the children of the land.

Mr. Herr. In regard to the abuse of this, I am in thorough sympathy with the idea of my friend, Mr. Heyburn. In very many of our country districts the school exhibition consists of a lot of comic speeches and dialogues, and a whole lot of material which should not be allowed on the programme of a farmers' institute. But where an essay is to be read, and literary competition recognized, we are going to have a successful institute every time.

Mr. Heyburn. Relative to the subjects for the children to speak upon, have a committee appointed for that purpose.

The Chairman. Let it be understood also that it is impossible for the children of every parent to take part.

Mr. Hutchison. We have endeavored in our county to bring up our institutes and our evening entertainments, to as high a standard as

possible. For this last purpose we secure young ladies and gentlemen from the public schools, and others, to assist us. If we have each evening two or three recitations, we find this brings out the people, and gives them a good entertainment, though it breaks in on the work of the day. In this way we recognize the farmers' sons and daughters throughout the sessions of the institutes. I am very careful in selecting those who are somewhat above par in this particular. We do not have any exhibitions such as Mr. Herr speaks of. I find it does good; it gets people interested; the newspapers take notice of it, and it has a good effect. We can have an institute going on all day on the question of fertility, and these deep subjects; but we want a change at night, and we secure one or two of the speakers, and also have recitations. Then, the people of the community come to the institute; and the trouble is that we cannot get a house large enough to hold our audiences.

Mr. Sexton. I am decidedly in favor of reaching the children of the public schools, and especially the children of the farm, through our farmers' institutes. Last evening, while listening to that very excellent talk of our friend, Mr. Cooper, I could not help thinking of the general good, and of the particular good all that excellent talk did to a lot of old, gray-headed men, in reminding them how they ought to fix up their homes, and how they should do the work. There were present a whole lot of old, gray-headed people, and our good friend trying to instruct us what we should do. Now, we have got beyond that day, and I think it fell upon poor soil. If he had had an audience of young men and young women, such as ought to have listened to that lecture, no doubt much more good would have been done. That fell cold, and like an iceberg, probably, upon our hearts, and told us what we might have done while we were younger.

Now, I have learned that the way to get at the parents, is to reach the children; and you can accomplish your object every time. We can do lots of good by reaching the boys and girls at the farmers' institutes, by letting them feel that they are part of us, and have something to do in this great work. They are the ones that very soon must take the places of the middle-aged as well as the very venerable men here to-day. The way to reach them is to provide something for these sons and daughters at the farmers' institutes, and we can provide something at every session.

Mr. Patterson (of Fulton). Is it right and proper for the institute manager to allow the school children to compete for prizes, and have the prize paid from the State money?

Mr. Heyburn. We do not use the State money. We have an agricultural society in our county, and they pay all such bills.

Chairman Woodward. Having been advised last year of the method

adopted, as spoken of by the gentleman from Delaware, (Mr. Heyburn), I found it to be a very successful and profitable plan, neither the time nor the money of the State being taken. It certainly did have a good effect on the institute meetings.

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## AUDIENCES PARTICIPATING IN DISCUSSIONS.

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The next question is No. 11. "How May an Audience Be Brought to Participate in the Discussion?" To be answered by Mr. J. W. Allison. (After an interval.) Mr. Allison was compelled to leave. Will some one volunteer to answer the question?

Mr. Smith (of Clearfield.) The only way I know is to invite some one in the audience to speak, who is known to be competent..

Mrs. Starr. I want to tell a story, in connection with the experience of Mr. Dye, of New Jersey, in which State I have also had some experience practically on a farm. We have in New Jersey potato growing as an industry; but no one could get the potato growers to tell how they worked, and how they made their work so successful. Mr. Dye, to bring them out, sent to Ohio, and imported a potato grower, who raised potatoes under different conditions entirely. The New Jersey potato growers were so indignant that they got up and told their story; and they told what we never could get out of them before. (Applause.)

Chairman Woodward. The best speech of the day was made by a woman. (Renewed applause.)

Mr. Murray. I have discovered this, that audiences in the presence of the State speakers are very timid. Only a few, and in some cases none at all, are willing to volunteer any speaking. They cannot even be persuaded to answer a question. Then, for some reason or other, after your professional men, or State speakers, are out of the way, the farmers will talk.

Mr. Hutchison. This is a very important question. I have had some experience with it; and the best way to bring out the speakers in the audience, I think, is to know your audience, and to know some gentlemen in the audience who have made a success along certain lines—say, fruit culture, stock raising or dairying—and have these questions referred to them. If anyone present has met with success in a certain line, get him to speak on it, and that will give courage to some other farmer. Let a speaker refrain from speaking, and call on a gentleman in the audience, that he knows, to say something. After



you get them interested in this way, you can get up the best arguments often, and have an exceedingly good institute. Often they can be reached through the question box.

Dr. Frear. I was very much interested in the institutes held in Armstrong. There they called the institute the college. I was also interested there in one phase of the question box, and of the advantage of it in connection with those unaccustomed to speak before audiences. The question was not sprung without any notice. I have confessed to myself, when I am trying to be careful to tell the truth, that the question box becomes a sort of an infernal machine; but I recognize it as a most useful part of the institute work. In these instances these questions were put as in a sort of open parliament, and this open parliament was based upon the sheep industry. A committee was appointed of four or five men of the community, and they assigned these questions to certain men of the community. The speakers were not asked to participate, unless they desired. They simply gave their local experience. Now, every body began to talk after that, and we had no difficulty during the remainder of that institute.

Chairman Woodward. Our friend, Secretary Dye, of New Jersey, who has been present with us during the meetings, is compelled to take a train. The gentlemen of the Board ask Mr. Dye to say a few parting words before he goes.

Mr. Dye. First of all, Mr. Chairman, I want to congratulate myself, and thank you, for this splendid opportunity to meet so many Pennsylvania farmers and Pennsylvania workers. I have been in the work over in New Jersey, not so far away, for more than a dozen years, and have always looked with an anxious heart toward Harrisburg, but never had the opportunity until this meeting to be with you. Secretary Hamilton sent me a programme the other day, just in time to enable me to come here; and I said: "Now I am going over into Pennsylvania to meet those people, if I can." And I am very glad that I am here. I have enjoyed the meeting very much; it has been very profitable. I want to congratulate Secretary Hamilton on the inauguration of this movement, and on the very important effect for good it will have on these institute workers, and friends, here to-day. It cannot help but be profitable to people to meet together and compare notes, and ascertain what the difficulties are, and so prepare themselves for the future work.

Gentlemen, you are engaged in a great work. You do not have to think back far when such a movement as this was unheard of, and unthought of—educating farmers to come together to study their business. There are localities now where farmers would run from such an idea. But this may be because of tastes unsuited to it, and on account of lack of knowledge of some of the principles of the in-



stitute work in those localities where this movement has not begun. They are looking to us to find how the movement takes here, and to find out whether it is profitable or not. They want to be particular, and lay good foundations, and to know whether this is to be a success, and a practical help to this old industry.

But, gentlemen, I do not believe in taking any backward steps in the consideration of any question, or to halt an instant in doing anything but what will help it up. We took up this question in New Jersey some years ago, and it was discussed at some length. It was argued that on the farm is where the rural home is, and where citizens are who most fully recognize and obey our laws; that the rural home is where children are born and bred, and morally and physically fitted for the duties of life, and from whence come many of our most eminent and useful citizens; and that if any class of people are to be elevated, that is the place to go. Now, let us remember, ladies and gentlemen, that while we are getting along, we must try to help our fellow workers; that while we are doing this, we are striving to build better homes in which to rear the farmers' children. As Mr. Butz said, we are preparing for the future generation. We should remember that in one of these farm households was the mother of a Lincoln, and the father of a Garfield, as well as a Washington, and that from these places have sprung many of our most useful statesmen. Then let us try to do all we can to establish and build up this great agricultural industry.

I had the honor of being down before the Ways and Means Committee, connected with which was one of the representatives of this State; and I told them there that we are essentially an American people, and the government ought to do all it can to perpetuate and improve our farmers' homes. We do not want to be tenants. I congratulate you upon your splendid showing here, and the good attendance. I cannot help but feel that these meetings must result in great good.

Come over into New Jersey some time, and we will take up the subject of oyster culture. I find the New York State workers like to meet over in New Jersey, and talk over the matter of our bivalves, sampling them at the same time. Come over soon, and we will endeavor to make your stay as pleasant and profitable as possible. (Applause.)

Mr. Herr. I want to make a motion, that we give a vote of thanks to Secretary Dye for his presence with us, and for his valuable suggestions while attending our meeting; and that we extend an invitation to him to attend our sessions at any time.

The motion was seconded by Secretary Hamilton, and unanimously agreed to.

Chairman Woodward. The Chair takes great pleasure in thank-

ing you, Mr. Dye, on behalf of this convention, for your presence with us; and we hope you will come to our sessions as often as possible.

Mr. Dye. We will try to greet you from ocean front to the Delaware, from this day on, whenever we meet you; and it will give us much pleasure to attend your sessions whenever we can. (Applause, during which Mr. Dye withdraws.)

Chairman Woodward. Question No. 11. "How May an Audience Be Brought to Participate in the Discussion?" was before the conference when the announcement was made that Secretary Dye was compelled to leave on the next train. Is there anything further on the subject numbered 11? (After an interval.)

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### UNAUTHORIZED SPEECHES.

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The next question is No. 12; "Should a Speaker Take Advantage of a Question to Make a Speech? If not, How Will You Stop Him?" This is to be answered first by Mr. J. F. Boyer, of Snyder county.

Mr. Boyer. Mr. Chairman: This question is almost similar to question No. 8. If I understand the idea of these farmers' institutes, it is to get our rural people to think; and the life of the institute is in the question box. Whenever we get our rural people, or the audience, to asking questions, then we are sure that we have the proper topic. We are engaged to-day not only in general farming, but in horticulture, dairying and stock raising, and in fact, all lines of business; and these bring out a great many questions. I think if we stop a speaker from answering these questions, that we are stopping the interest and life of the institute.

Chairman Woodward. The gentleman from Somerset, Mr. Critchfield.

Mr. Critchfield. I was not going to say anything; but I am always willing to answer at roll call. I do not know whether the gentleman who has just spoken understands exactly the import of this question. I know a great many do take advantage of a question to make a speech. They want to get the floor on some subject; it may be the tax question. Inasmuch as his name does not appear on the programme, and the question box is open, perhaps he is asked by the manager to speak upon this very question. Sometimes the manager sees that it will not do; then, in order to get around the local manager, the person desirous of obtaining the floor will have some

person to put in a question, with the request that the man who wants the floor shall answer it.

The Chairman. I have seen that done. It is a great abuse in institute work.

Mr. Critchfield. It is an evil that sometimes does an institute more harm than anything else. When this is persisted in, I think some person ought to rise up in the audience, and say it is entirely out of order for any person to impose upon an audience a lecture or speech that was not provided for upon the programme.

Chairman Woodward. Another phase of the question; and that is, some of those who are upon the programme are in the habit of making an exceedingly brief speech, or reading an exceedingly brief paper, and then asking for questions; and then the questions will be put, and those putting them will ask certain persons to answer; and there will be five or six speeches on those questions, when those gentlemen who are anxious to speak obtain the floor.

Mr. Beardslee. It seems to me that this question and the one next to it should be merged together. Now, the effect in these cases might be this: We have seen from the general manager to the local manager instructions as to the proper course to take, that when we find a man has digressed from the spirit of the occasion to interpolate some other subject, to call the attention of the speaker to the fact, and have the man called to order.

Mr. Smith (Clearfield). I want to say that I think five minutes ought to be long enough to answer any question. It seems to me that a speech of half an hour would be entirely out of place, and would not be allowed by any chairman who has any idea of business at all. If I should ask a question at a farmers' institute, and it took a half an hour to answer it, I could not carry the answer home with me. I think we get the best knowledge when a question is answered in a few words. From three to five minutes ought to be plenty of time to answer a question. If I were chairman, I would cut off a speech extending beyond the proper limit, whether it were made by a member of the institute, or one of my neighbors at home.

The Chairman. The question is, how will you stop it? I recognize the delicacy of doing it in such a manner as not to offend.

Dr. Conard. Last winter a question was put in the question box, and in fact handed to me as a manager, the reading of which brought to the floor a man who was interested in the sale of a certain machine. The question was prepared in such a manner that it gave him the best opportunity in the world to advertise his machine. Now, I should have smothered the question, or limited his answer to five minutes; but there was something in the paper that seemed to require consideration. Then, this man was one of a local committee of an institute to be held probably two weeks hence, and at a point where



it was difficult to hold an institute. By creating a disturbance it would act as a wet blanket on the institute to come. Therefore, we did nothing, but suffered the man to speak for half an hour. That was rather a complicated case.

Mr. Hiester. Mr. Chairman: It strikes me that the best way to stop it, is to stop it before it begins. Sometimes we are very nearly in the position of a man who is driving, and the bolt falls out of the shaft, and the shaft falls against the horse's hind legs; and the only way to stop him is to let him kick the shaft off. I have seen men get up to answer a question, and take three-quarters of an hour.

Senator Critchfield referred to what he thought ought to be done in this line of work, by saying that somebody ought to get up in the audience and call him to order. His neighbor ought to do it, but he will not do it. Then again the person may be of such a peculiar disposition that the chairman feels a delicacy in calling him down, as suggested just now. The only way I can see is to have it understood that the question must be answered briefly, and that not more than five minutes will be allowed under any circumstances to answer questions. We must have all our plans properly arranged beforehand. If we do not provide against these things, we will get into trouble.

Mr. Clark. After all, it resolves itself down to the one factor in the whole matter, and that is to find chairmen who are able to keep going, and meet these people on common ground—to control them, well as others who are inclined to cause unrest on the part of the audience. Where we find a weak chairman, these fellows will take advantage of it to accomplish what they want. There are certain kinds and certain cases when men are needed who are experts, and even then difficulties arise. I know of an instance where a man wanted to talk, and where others said, "We must not hear this man!" I was utterly helpless. I could not challenge him without confusion. I think under such circumstances it is better to accept the situation, and get rid of it in that way.

Mr. Herr. Mr. Chairman: I was about to say that the man who had no more courtesy or manners at a farmers' institute than to get up and explode himself on a little mission of his own, and failing otherwise to accomplish this, has a question referred to himself, and tries to discuss the subject before the audience, and advertising his wares, and over-riding all rules of propriety, is entitled to no more credit from the chair; and the sooner he is called down the better, and the audience will sustain the chair. I have no patience with such people. And that man whom Dr. Conard referred to, who advertised his machine during the proceedings of an institute, the quicker he is left out of the institute, the better. (Applause.) I do not care who he is.



Chairman Woodward. For the information of the gentleman from Clinton (Mr. Herr), I would say that I was present at that meeting; and the chair consulted those around him about it, giving it due consideration. Taking all the surroundings into account, I advised him to let the thing go for that length of time.

Mr. Hoyt. I cannot answer this as briefly as my old friend from Tioga did—I mean my old friend T. J. Drumiller. He would say: “I think, my friend, we have enough of that. You speak to the subject properly before the institute.” As the saying is, “that would cook his goose.”

Mr. Peck. I met the gentleman that my friend Critchfield also met, up in the northern part of the State. I was talking, and he inquired of me whether he could ask me a question, and I said, certainly. And in asking the question he went on to answer, and attempted to talk, and did talk half an hour, delivering a lecture in his own way. I learned that my friend Critchfield had met the same gentleman, who proposed and did put to him a similar question. On that question the chairman did not seem to be able to control him, or didn't try in any way to shut off the man. I hardly knew what step it was advisable to take, or whether it was always wise to do that with the State speaker.

Mr. Critchfield. He asked me if he might ask me a question, and I said he could. Then he proceeded to answer, and so fully, that I sat down and went to sleep. (Laughter and applause.)

Mr. Herr. Perhaps the speaker knew that Mr. Peck was a lawyer.

Mr. McWilliams. Is it not the duty of a chairman thoroughly conversant with local affairs to supervise questions, and sometimes to keep them back entirely?

Dr. Conard. The gentleman who was in the chair was willing to suppress this man, but asked what he should do. Knowing the situation, we thought it was best under the circumstances to let him go on.

Mr. McWilliams. It seems to me it is the duty of the chairman sometimes to suppress questions, and not let them come out at all.

Chairman Woodward. Undoubtedly; but the question committee, if there be one, will sometimes permit questions to be asked that are not properly allowable.

## HOW OFTEN SHOULD ANY ONE SPEAKER BE CALLED UPON IN ANY ONE SESSION?

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We will proceed to the next question, No. 13; "How Often Should Any One Speaker Be Called upon in any One Session?" Mr. Thomas J. Philips.

Mr. Philips. Mr. Chairman: This question is like many of the others; it is not capable of being given a specific answer, I think. The circumstances and environments have everything to do with it. If it is possible that one man in an audience, by reason of superior knowledge, or greater experience, is capable of imparting information that nobody else has, in my judgment, the audience would certainly be justified in calling on him more than once during that session. That is what he is there for, more particularly if he is a State lecturer. I believe the State lecturers are the servants of the people. They are sent there for that institute and the people of that community to use, and under certain lines to impart instruction. That is the purpose of the institute. They should be men—at least they are supposed to be men of broader gauge and greater ability, and greater experience, than many of those in that local community. It so happens that a State speaker may have occupied his allotted time on the floor, and a local speaker follow him upon an entirely different subject, but one on which that State speaker is thoroughly conversant. It would certainly be proper to call on that State speaker in that connection, and to inquire, "What is the experience in another locality?" "What has proved proper in certain portions of the State?" Many questions are new to certain localities, while they are old in others. It is possible to add his experience, and impart information to those in another locality, where the subject would be comparatively new. Reference has been made to sheep growing. Here is a new line to some—the sheep industry. Some of us live in localities where one agricultural industry is more prominent than in the locality to which we are sent, and in that event it is our duty to give what information we may find to be of interest.

There is probably no question upon which the State speaker will exceed fifteen or twenty minutes; and an audience should be permitted to call upon him as long as he is there, when new subjects arise in their minds, and subjects with which he is conversant. I think this should be conceded to be the general rule with men of experience. If one man is the best man, let him speak a number of

times. If he is not a better man than others present, as few times as possible is certainly best.

Mr. Patterson (of Fulton). I think the answer to that question depends upon where the institute is being held. If held in a new place, where the farmers have not many institutes—take our county, where the institutes are a comparatively new thing, and especially in part of the county—it requires speakers from abroad to speak rather frequently. I find that they ask the speakers for information on this topic and on that, and they are allowed to bring anything out that is new to all. I think it would be better to make their speeches short, and to answer the questions of the people.

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### PRINTING PROCEEDINGS.

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Chairman Woodward. The next question is No. 14; "Should Local Managers Have the Proceedings Printed in the County Papers? If so, How Can this Be Best Done?" To be answered by Mr. D. Holderbaum. (There being no response.) Who will volunteer this information?

Mr. Kahler. I think the proceedings should be printed in the county newspapers where it is practicable. For my own part, I never had any trouble in sending out for a reporter to take the proceedings, which are generally read with interest afterwards.

Mr. Peck. In my own county we always have a reporter, the secretary of the institute making out a full report; and that is produced in duplicate by typewriter, and copies furnished to each of the papers. When we do that, every paper in the county is glad to publish our proceedings in full.

Mr. Hoyt. The gentleman stole a part of my thunder. He has been in the habit of doing that before. In our locality we have never had any trouble in having the reports published in our papers—the farmers of the county as a whole, I am speaking of now, because the institutes are not always county institutes. Usually the newspapers have a reporter present; and the farmers of the county get more benefit, as a whole, from those newspaper reports than they do from the institutes themselves, because they are not generally attended, I am sorry to say. If a reporter is not present, the secretary should, of course, be expected to write out the proceedings, and furnish copies for publication.

Mr. Brodhead (of Susquehanna). In our county, last winter, when we had institutes, we had someone to take down the proceedings and furnish as many copies as there were papers published in the county. I think it pays to do so. For the work done last year, and the advertising, I think this year we will have better institutes.

Mr. Herr. I think it is well to have full proceedings of an institute published; but there are very few papers in the State, excepting agricultural papers, which will publish enough of the proceedings to make them intelligible and interesting. You can see who were there and took a part; but in the actual discussion, there are very few papers which will take that up.

Mr. Brown. For several years I have had no difficulty whatever in getting not only a report in the papers, but a very full report. If a report is not made for the papers, I think it is largely the fault of the local managers themselves. There are few country papers that have sufficient force to have one go in there, or to have a reporter go to these meetings and take a report of all that is said and done; and many of these papers perhaps might feel that they have not space for such a report. It is proper for the local manager to choose somebody to act as secretary; somebody who is qualified to make a good and fair report of the proceedings. I know the papers of my county have been anxious to receive these reports, and have uniformly published them whenever furnished. I know it has been the means of advertising the farmers' institutes, and also extending their usefulness. But comparatively few of the farmers of the county were present, yet in every case the buildings were crowded. Many who do not go, read the papers, and a good part of the influence which the farmers' institutes are exerting has been brought about by the local paper publications. I am very sure that when properly looked after, the country papers generally will be glad to publish the proceedings.

Chairman Woodward. I very thoroughly agree with the statement of the quite full reports that appeared in the York county papers last year.

Mr. Hutchison. This is a very important subject, because it is through the newspapers you can reach the farmers all through a county. An institute, as you know, does not reach out to the people beyond eight or ten miles. The difficulty has been to get the report in proper shape. I have had reporters to come, but a good report has been a difficult matter. I generally secure a secretary who is competent to report the proceedings. I hope the day is coming when the Department of Agriculture will be able to pay for the employment of a regular local reporter—giving additional money to secure a local reporter, or some one who will be paid a compensation, and who will write up the proceedings and place them in proper shape, as Mr. Peck has stated—some one competent to do this, and who will fur-



nish copies to all the newspapers; because in that way we can accomplish very much good by our labors.

Mr. Smith (of Clearfield). In our county the editors are exceedingly liberal. Being personally acquainted with the newspaper men in Clearfield, I have had a reporter go along and take notes, not only of the speakers' names, but parts of their addresses, and parts of the essays, all through the proceedings, and this reporter has given us from a column to a column and a half every day. As a consequence, I believe good results have followed.

Mr. Peck. I desire to add a word to what my friend Hutchison has said, as to the importance of these reports being published. In my own mind, twice as much good has been done by the newspaper reports as by the institutes themselves; and I have become so much interested myself as to take a report when I had the time to do so. By making a full report, and having it published, we could add to the interest of the institutes.

Mr. Clark. Our papers are anxious to publish the news given to them; but they say they cannot afford to send out a reporter. Then we do this work, and we make an effort to give them just as brief a report as we can, covering all the points, including such papers as we believe will be of interest to the public. We say to one editor, "When you have this in type, please send a proof of it to all the papers in town." The only trouble we have is to make the one report. When that is made, it not only reaches one of the editors, but copies of it go to the various papers. •

Mr. Johnston. The only redeeming feature in the holding of institutes in the county towns is that we get a full report; and so in the country towns where they have a paper. The trouble is to get a report suitable for the papers. We usually cannot get secretaries who are able to make a report that will do the people much good, as they just mention the items discussed, and the names of the men who speak. This does not do any good. If you have a secretary who can pick out some of the important thoughts in a certain address or paper and clothe it in proper language for the newspaper, he is useful. Otherwise a report does no good.

Chairman Woodward. In the State of New York the institutes are reported properly. A man who is a thoroughly skilled farmer, and an accurate writer, is taken with the institute corps. He can write out a report of what you like to read, digested so as to contain exactly what you want. He takes the trouble to write out just what is wanted, and it is published. They were the best reports I have seen. They were always uniformly printed in the local papers.

Mr. Critchfield. If we are going to have reports to amount to anything, they must be gotten up by farmers. The ordinary country

paper reporter, what he writes up for the newspaper is frequently so written, or prepared, that we do not care about it.

Mr. Brown. Another reason why we should not depend, if we want a fair report of our proceedings, is that we cannot rely upon the scribblers employed by the newspapers. (Laughter.) I have known important meetings to be held, embracing annual proceedings of very influential agricultural organizations, and those proceedings reported for the city newspapers by these young fellows whom they send there as reporters—young fellows who spend their time during the day fooling around with other young people, and drinking beer, or “ambrosia,” or something else in the shade, and then hustle around about the time to send the report to their papers, hunting a programme, and sending that; and it may be that there was not more than one or two on that programme who materialized. So the report the next day would be of a programme as it was intended to be, but which was not carried out at all. In justice to ourselves we must not depend upon that kind of a report.

I think any county manager who has the interest of the institutes at heart, ought to see to it that his county, at least, a different method is provided, and have some one secured who will have the support of the local committee, or the committee in the neighborhood of each institute. By some such arrangement, we will do much to build up the farmers’ institutes, and do much also that will benefit our agricultural people.

I will say now, that there is a paper—I am not going to advertise it particularly—in Philadelphia that has taken the pains to send throughout Pennsylvania to all the different agricultural meetings of great interest—and this is one of them—to the different State Grange meetings; to the Grange and other farmers’ picnics, and to the meetings of importance all over the State, a very competent reporter. And I would say, to the honor of her sex, that I have never known agricultural meetings to be reported better than they are reported by the lady who represents the Philadelphia Ledger. (Applause.)

Mrs. Starr. I would say that probably one reason is that I am a practical farmer. (Renewed applause.)

Mr. Clark. To show the anxiety sometimes of the newspapers to catch hold of the proceedings, I remember—I think it was last winter—that when I came to Export to hold a meeting in the evening, the evening papers of Pittsburg, when they came in on the train, had a report of the proceedings before the meeting had taken place; and they mentioned the wonderful success of the meeting that had been held there. The meeting had commenced in the afternoon, after these papers had been printed, and circulated.

Mr. Critchfield. The point that I was about to make is proven here in the reporter of the Ledger, who has stated that she is a prac-

tical farmer. That only illustrates the idea that we have been trying to bring out, that a report must be made by some one who knows the wants of the agricultural class. That is the reason the reporter referred to is the leading "Starr" in the constellation of reporters.

Mr. Speer. I think these speakers have cast some slurs that were not intended, when they said that these papers are not able to get the right kind of reporters. I believe that they have been short sometimes; but in this county, where they have a good Normal School, I do not believe they have reporters who are not competent to do the work well. The proceedings of these meetings in the daily papers of Bloomsburg are quite creditable, I am sure.

Mr. Northup. I want to say something about the interest taken by the papers to get reports from these institutes. I know a farmer who worked ten hours in attending these institutes, and he was called an editor. He had hard work to do it. He worked in the institute all day long, and worked faithfully as he knew how. He then went to his room and burned the midnight oil there until some time into the "wee sma' hours" of the morning. He got something for it, of course; but it showed the anxiety on the part of the editor to get these proceedings. My impression is that the local manager has got to make some arrangement with the proprietors of the papers, and give them some points, so that the people all through the county may get the benefit of these institutes, and in that way make the institutes very profitable.

Chairman Woodward. The Chair knows the genial editor that has been referred to.

#### THANKING LOCAL INSTITUTE MANAGER.

Mr. Hiester. I desire to offer the following resolutions:

*Resolved*, That the thanks of this convention are due and are hereby extended to H. V. White, Esq., for his untiring efforts to make the meeting a success, for the interest he manifested in the personal comfort of every member, and his constant watchful care of us during our entire stay.

To the county commissioners for the use of the court house for our day meetings.

To the State Normal School for the use of their auditorium for our evening meetings.

To the young ladies and gentlemen of the State Normal School for the delightful music rendered at both of our evening entertainments.

To the associated press and local newspapers for the pains they have taken to secure a full and accurate report of our proceedings.

Mr. Hiester. I move the adoption of these resolutions.



The motion was seconded by Mr. Hutchison, and unanimously agreed to.

Mr. White. I feel that the vote of thanks to me for what I have done was uncalled for. It seems to me it was simply a duty as a local member to do what I could for the Board, and institute workers, when you came to this town, as you did, at my invitation. I have been more than pleased to meet all of you. I have been both entertained and instructed by what has been done here. I cannot but feel that if I am permitted to go on with the institute work in this county, I shall be able to do better work in the future than I have done in the past year.

Thanking you all for the very pleasant manner in which you have entertained us, and our citizens who have been able to meet with you—and with the simple statement that the reason of the small attendance in the evenings was due to the free and high school exercises that were held last night and the night before—I bid you all good by, hoping while here you were treated so pleasantly that you will be pleased to come again. (Applause.)

#### STRAWBERRIES.

The Chairman laid before the convention remarkable samples of strawberries and strawberry plants, grown at Catawissa by a gentleman 85 years of age, the plants having been raised, and this remarkable product brought forth since the gentleman was 82 years of age. The strawberries and plants were inspected and much admired by everybody present.

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#### CONCLUDING ADDRESS.

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Secretary Hamilton. Mr. Chairman: I have used all the self-restraint of which I am capable, in refraining from annoying you during the sessions of this institute with any remarks by myself. I have been very anxious about this round-up meeting. I have for a long time thought that it would be a great advantage to the speakers whom the State is employing to give instruction in the local institutes, and the institute managers, to come together, and also the officials of the State Department which have control of the institute work in Pennsylvania, all to meet in a general conference, that the questions which perplex us might be brought up and discussed.

In the programme which has been prepared and has been carried



out in the days since we have met here, there have been put questions that are not hypothetical, but real; questions that the Director of Institutes in this State has had to meet. There have been in these sessions many different views expressed by men who think they know. Pennsylvania is, perhaps, of all of the States, one of the most difficult in which to secure unanimity. We are made up, largely, of descendants of Scotch-Irish, a class of people who are not slow to express their views; and when they once settle down into a conviction, it is almost impossible to shake them out of it. The best thing to do is to let them say their say. Indeed it is about the only thing possible.

As Director of Institutes for the past four years, I have carefully avoided interfering with the local management of our institutes, except when it was absolutely necessary, in order that harmony of work should be secured, but have left to the managers of the institutes of the different counties the making up of their programmes, the selection of their own local people for speakers, and the choice of the place where the institutes should be held. The largest liberty consistent with efficiency has been granted to the local managers in the arrangement of their institutes. It seems to me that this is wise, because they are better posted in regard to the needs and capabilities of their different sections, than any other men in the State. At the start the local managers, in a few instances, did not take any special interest in institute work; but I am glad to say this has ceased; and now, I think, there is not a single county in Pennsylvania in which the local manager is not a wide-awake, active, energetic, conscientious man, desiring to do his whole duty to the people in his community; and he has been courteous and polite in the execution of this often very difficult service.

In retiring from the duties of Director, I want to acknowledge my personal obligations to the men who have stood by me and have aided me in this work during the last four years. I can truthfully say that I have not, intentionally, injured the feelings of any man, and have tried to treat each courteously, and recognize the fact that others are entitled to their opinions, just as I am to mine; and let me also say, that in numberless instances many of you have gone out of your way to show your willingness to bend a little, if necessary, in order to carry out some plan that I had, perhaps rather arbitrarily prescribed.

And now, in this round-up meeting, I feel as if we had had a good time. I have learned a great deal, and have changed my mind upon a number of very important things. Suggestions have been made here that are exceedingly valuable and that had never occurred to me at all. Some things that I thought were perhaps mistaken views, I am now convinced you were right about; and on the other hand, I feel

that, perhaps, some of the members here who have been carrying out certain other views, will consider suggestions that have come from other quarters, and that the result will be that, henceforth, greater unanimity of action, uniformity of plan, and concentration of effort will be secured.

The farmers' institute in Pennsylvania is a great school; it is a great university. Some of you are directors in this university—trustees, as it were; and some of you are professors or teachers. We have six millions of people in Pennsylvania to reach, and there are but a handful of men who are to accomplish this great work. We come together with the single view of having a clear understanding of the underlying principles that are for our benefit. We, as agricultural people, have been too disintegrated—separated by differences in political views, by our social relations and business interests, and so have antagonized each other, and we have had great difficulty in agreeing upon any common plan of action. We should now insist on standing together.

My opinion is, that the Department of Agriculture will prove, ultimately, to be a sort of rallying place, to which all the various interests of agriculture in this State can come; and that there will be, for many years, direction given to agricultural thought, and to agricultural practice, in this State, that will concentrate it, and make it a great power in Pennsylvania. This is a time of trusts and combinations. Whether we believe in trusts, or whether we do not, they are on us; and all kinds of interests are united in these organizations, to be wielded by a single head. Agriculture will not be successful in the great competition in which the trusts are competing to-day, until it can be solidified and concentrated, and be agreed upon a line of policy. My hope is, that through organization in Pennsylvania we will be able, before many years, to drop petty differences and the minor things that separate us, and unite upon the great leading principles that are of importance to the whole agricultural people of this State. My desire and my hope is, that the Agricultural Department of Pennsylvania shall take the lead of the Departments of Agriculture of all the States of the Union. We have behind us a great constituency, and I am sure that the sincere purpose of us all is to benefit, and help and bless, if we can know in what direction this benefit, and help and blessing is needed and can be applied. I hope that the members of this organization of institute teachers and directors, who are interested in the elevation of agriculture in Pennsylvania, will make it a point to write to me from time to time, giving any suggestions that they have for the elevating and improving of agriculture in this great State. I believe I am old enough, and have had experience enough to be willing to take suggestions; and am not so

settled in my convictions as to be unable to change when convinced of error.

We want to get on the right track, and we want to keep going in the right direction, and to get the best results. We want to see clearly what we want, and then we want to unite for that thing; and not be diverted by trivial side issues, that are simply presented for the purpose of tearing us apart. You know that the common practice among politicians, who want to gain their points, is to pull apart, and then they beat in detail. That effort has been made, and has succeeded, among the agricultural people of this State. They have been pulled apart; the Grange goes one way, the Alliance goes another, and the Farmers' Club another, and then the State Board goes another way, while the individual farmer takes up his own personal plans. The result is that we are disintegrated, without cohesiveness or definite purpose.

If this meeting has done nothing else, excepting this one thing, to make us feel that there is a more cordial relation existing between us, a better understanding of each other, a better appreciation of each other's worth—if it has done nothing more than this, it will have been worth all the money and all the time and effort that have been given to bring us together. And I hope this is not going to be the last time. Of course you know such meetings are expensive. There are no funds out of which they can be paid, unless saved, as I explained the other day, out of the institute fund. This year an effort was made to have this fund increased, so as to have one or two of these meetings held annually; but it failed. If any money can be saved out of the money that has been appropriated for the next two years, it is possible that Mr. Martin will be glad to have a meeting or two similar to this. I hope he may be able to save enough for that purpose.

Let me say in conclusion, that I am personally indebted to the members of the State Board of Agriculture for help in a most trying time. Being made Deputy Secretary of Agriculture, and Director of Institutes, at a time when this work was in the hands of the old State Board, some of them felt that they had been badly treated—that they had been the victims of an act of injustice, or at least had been supplanted in an unceremonious way. I was brought in to take up the work that had been taken from them; and I was expected to have them continue in cordial relations with me after the treatment that injured the feelings of a great many of our most excellent men. But I want to say that almost without exception the members of the State Board dropped their own personal feelings, and their own personal grievances, and turned in to help me make this institute work a success. I am indebted to them, every man of them, for this help. Without their aid nothing, or almost nothing



could have been done. Certainly we could not have reached the state of perfection in the institute work, of which our institute workers are now so proud. I want to say, also, that I believe that the farmers' institute work in Pennsylvania to-day is at the head of the list in the farmers' institute work in the United States of America. (Applause.) That is my profound conviction. And I will take the men who have been here, 100 of them, or 125, and I will put them up against the institute workers of any State in the Union (hearty applause), individually or collectively. There is not a university in America that possesses their talent, in Harvard or Yale, or in John Hopkins, or any other. (Applause.) We can officer such an university with capable men. Our men can be depended upon, no matter where they are placed. They are tried men. They do not know everything; but they do know some things, and they know them well. I felt that it is due ourselves to say that; and I say it because it is true. I know the men.

And now, friends, we have a great work ahead of us. We have organization—we have from 100 to 150 men who understand one another. They are leaders in agriculture in this State, and upon them as leaders there devolves great responsibility. It is of the highest importance that they stand by each other, as well as understand each other. Interested in a common calling, it ought not to be a great many years before this solidification of which I have spoken becomes general. It depends upon us; we can bring about a change in the condition of the agricultural industry in Pennsylvania by simply acting intelligently and acting together. We need some legislation, and we will get it—we will get it whenever we ask for it, and ask for it together; but we must be careful what we ask. We should be sure that we ask for nothing excepting that which is our just due, and then stand behind the men who are urging our claims upon the law-making powers of the State.

I thank you very cordially and very heartily for coming to this place, and for the great interest you have taken, as well as for the intelligent advice you have given; and when the proceedings of these meetings are printed, I believe they can be put out as the best publication of its kind that there has ever been in this or any other country. I am much obliged to you for your help; and I ask you to continue to help me solve the problems that are involved in this great work that lies so close to the hearts of us all. (Applause.)

#### THANKING THE SECRETARY.

Mr. Seeds. Mr. Chairman: I am like the girl who walked fifteen miles to get married—I believe it is a good thing for us to be here. I move that a vote of thanks be extended to Secretary Hamilton for



bringing us here, and for the interest he has taken in looking after our welfare, including the provisions made for the payment of our expenses.

The motion was seconded by Mr. Critchfield, and unanimously agreed to.

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### MISCELLANEOUS.

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Chairman Woodward. The Chair understood that by the action had this morning, the morning and afternoon programmes were reversed, and that we are to take up the morning programme this afternoon.

Mr. Hiester. That was the intention, as it was thought that possibly we could not get through with the afternoon programme. A number of members are going away on the noon trains, and I do not believe we can have anything like a full meeting this afternoon. Therefore, I move that when we adjourn, we adjourn *sine die*.

The motion was seconded by Mr. Critchfield.

Secretary Hamilton. There are a number of papers that have not been handed to me. Some of them I know about; but the papers that were not read this morning are still in possession of the writers. I hope they will be kind enough to give them to me before they leave Bloomsburg. Any who do not have papers with them, who intended to talk, if they will have their intended talks typewritten and mailed to me the first opportunity, I shall be thankful. We want them put in their proper places when the proceedings are finished. I do not want anybody to be left out.

Mr. Smith (of Clearfield). Will these books be printed for free distribution?

Secretary Hamilton. The Secretary of Agriculture is authorized, under the law, to have bulletins printed giving information upon agricultural subjects. The number of copies is limited by law to 5,000. That number I can have printed without expense to you or the Department. It comes out of the general printing expense account, and the provision is found in the general law establishing the Department. They will not cost you a cent; we have a fund for printing, and for postage.

Mr. Barber. When will we get them?

Secretary Hamilton. As soon after they are published as possible.

Mr. Critchfield. There is a word that I wish to say. I was asked to prepare a paper, to be read to-day, and I see that my name is on the programme. If the paper should not appear in the Bulletin that is to go out, it will only be because I have not the time now to make the preparation.

Secretary Hamilton. One of the greatest mistakes—and I want to say this now to the institute lecturers—one of the greatest mistakes you make, if you do it, is to suppress your speeches, or refuse to have them printed, on the ground that so many people will read them that they will be flat things when you come to speak to the institute. That is a great mistake. Do not keep it tied up in a napkin anywhere. Get it out to all you can, whether 3,000 or 5,000, or 5,000,000. Let it go forth to the world, if it is worth anything. Get it out, and after you have got it out, you will be surprised how few people will read it. (Much laughter.) It will not hurt your lecture at all. We are all so naturally conceited that we think everybody hears, and we think that everybody reads what we say; and are surprised when we hear the expression, "What did you say his name was?" We are not as well known and as important as we think.

Chairman Woodward. Better get a new corps of lecturers.

Secretary Hamilton. I see. (Laughter.) At the end of the season turn your lectures over to me. Then they can be revised, if you want to use them again, for with some it is impossible to get up a new lecture every year; their whole life work is embodied in it. But a man can give the story of his life work over again, with some new experiences, and it will be all right; and if he has verified it over again, it is worth more than ever before. But if it is the same old sermon, delivered each year in the same way, it will not usually take with the same audience, and some one may say: "He is lazy and has been loafing, and is now trying to palm off on us the same old story." One does not want to do that; but he needs to reach out, and widen his knowledge, and then to train himself to meet new conditions. This printing puts him on his mettle for the next year, and he has to beat himself.

Mr. Critchfield. I do not think it is fair for the Professor to look towards the Chairman, when he speaks about repeating the same old lecture, or giving the same old experiences when he is making his speech.

Chairman Woodward. I think so, too. (Laughter.)

Mr. Critchfield. If I had the time I should like to have the stenographer take down what I intended to say on the subject of "Potato Culture," which had been assigned me for to-day's session. As it is, I have not written a word on the subject; but I will, and send in the paper, if it is possible to get the time to do it.

Secretary Hamilton. I would like very much to have what you intended to say on the subject.

Mr. Clark. Mr. McHenry has sent me a letter stating that he was not able to come to this meeting. A few weeks ago his barn, and some of his crops, cattle and horses, were destroyed by fire. He requests me to make this announcement, to account for his absence.

It was unanimously agreed that all the papers advertised to be read at the morning's session be printed in the proceedings, the titles of the papers and the authors being given as follows:

1. "Fruit Culture for Profit," by Gabriel Hiester, Esq., member from Dauphin, Harrisburg, Pa.

2. "Treatment of Non-Productive Orchards," by Prof. S. B. Heiges, member from York, York county, Pa.

3. "Small Fruit for Comfort," by F. F. Merceron, Esq., Catawissa, Columbia county, Pa.

4. "Potato Culture," by Hon. N. B. Critchfield, member from Somerset, Critchfield P. O., Pa.

5. "Forage Crops," by Dr. H. P. Armsby, Director of Pennsylvania State Experiment Station, State College, Pa.

6. "Successful Dairying," by C. L. Peck, Esq., Coudersport, Potter county, Pa.

7. "Business Methods on the Farm," by Hon. Thos. J. Philips, Atglen, Chester county, Pa.

8. "The Breeding and Care of Swine," by J. S. Burns, Esq., member from Allegheny, Clinton, Pa.

9. "The Feeding and Management of Dairy Cattle," by Prof. Enos H. Hess, State College, Centre county, Pa.

#### ADJOURNMENT.

No further business appearing before the conference, the motion to adjourn *sine die* was unanimously agreed to; after adjournment all present, including visitors, joined in felicitations one to another, the expression being general that this had been the best and most successful meeting in the interests of agriculture that they had ever attended.

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